ADVENTURES OF FUTURE SCIENCE

October

WONDER stories

HUGO GERNSBACK
Editor

A GERNSBACK PUBLICATION

"MASTER OF THE ASTEROID"
by Clark Ashton Smith

Other Science Stories
In This Issue

"THE PLANET OF YOUTH"
by Stanley A. Coblentz

"CHICAGO AND A.D."
by Paul Ernst

"THE DEATH OF IRON"
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WONDER Stories

CONTENTS FOR OCTOBER, 1932

THE PLANET OF YOUTH
by Stanton A. Coblentz ..... Page 390
Frantically they rushed into space toward the promised land . . . then the bubble burst . . .

OUTCASTS FROM MARS
by Arthur G. Stangland ..... Page 406
Homeless, vagrants of space, they determined to find a homeland . . . but they went too far . . .

CHICAGO, 2042 A.D.
by Paul Bolton ..... Page 416
A new world met their gaze, but behind it lurked the old diseases, the old corruptions . . .

MASTER OF THE ASTEROID
by Clark Ashton Smith ..... Page 434
They worshipped him as a god, this man condemned to death on that lonely world . . .

THE MAN OF STONE
by Hazel Heald ..... Page 440
Petrified they lay . . . man and wife . . . and behind this grim tragedy was the diary of the madman . . .

THE DEATH OF IRON
(In Three Parts — Part Two)
by S. S. Held ..... Page 446
A rotting world, a world of dangers and sudden death replaced the happy prosperous land . . .

WHAT IS YOUR SCIENCE KNOWLEDGE? ..... Page 468

PRIZE WINNING LETTERS— JULY COVER CONTEST ..... Page 469

SCIENCE QUESTIONS AND ANSWERS ..... Page 473

THE READER SPEAKS— Letters from Readers ..... Page 474

ON THE COVER THIS MONTH

from Clark Ashton Smith's exciting "Master of the Asteroid," we see the curious worshippers on the lonely asteroid paying homage to the imprisoned terrestrial in the space ship. Though the man is helpless and facing certain death, ironically he will be knelt to as a god by these curious beings.

NEXT MONTH

"The Venus Germ"
by R. F. STARZL

Mr. Starzl returns to our pages with this powerful and gripping story of an interplanetary intrigue, with the fate of worlds as pawns.

Just as today powerful interests use nations as pawns for their lust for power, so in the future their ambitions will extend to a wide sphere. Suppose for example that it were necessary for the life and happiness of all the people of the earth, that a few powerful interests give up their domination of other worlds. Would they be philanthropic and do it; or would there be a merry battle before right and justice had its way?

Mr. Starzl answers in this unusual story of two worlds.

"The Lake of Life"
by ARTHUR G. STANGLAND

One of the unexplored mysteries of the world is central Australia. From what we know of that vast, baking continent, the forces of evolution have played queer tricks, and have produced veritable monsters of animal life.

We must be prepared then to accept what Mr. Stangland tells us in this story, as a real possibility. That forms of life might develop in that untamed desert, different from anything we know, is a possibility. This exciting story shows what might happen when men meet creatures of a bizarre world.

"The Death of Iron"
by S. S. HELD

Slowly we have been watching in this story the decay of a world. Man's civilization, built up painfully over many milennia seems about to vanish. We must expect then that the minds and emotions of men will turn to queer thoughts and queer activities. When men and women are faced by death they no longer operate under the same restraints as when they expect a long life. In this installment we will see further how life slowly ebbs from the 20th century world.

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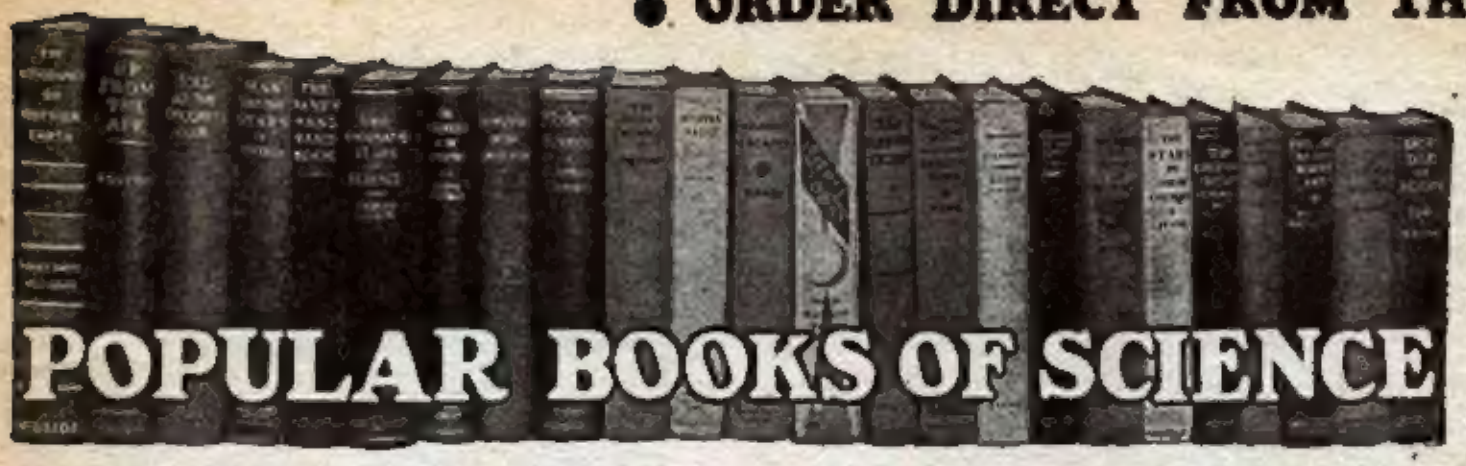

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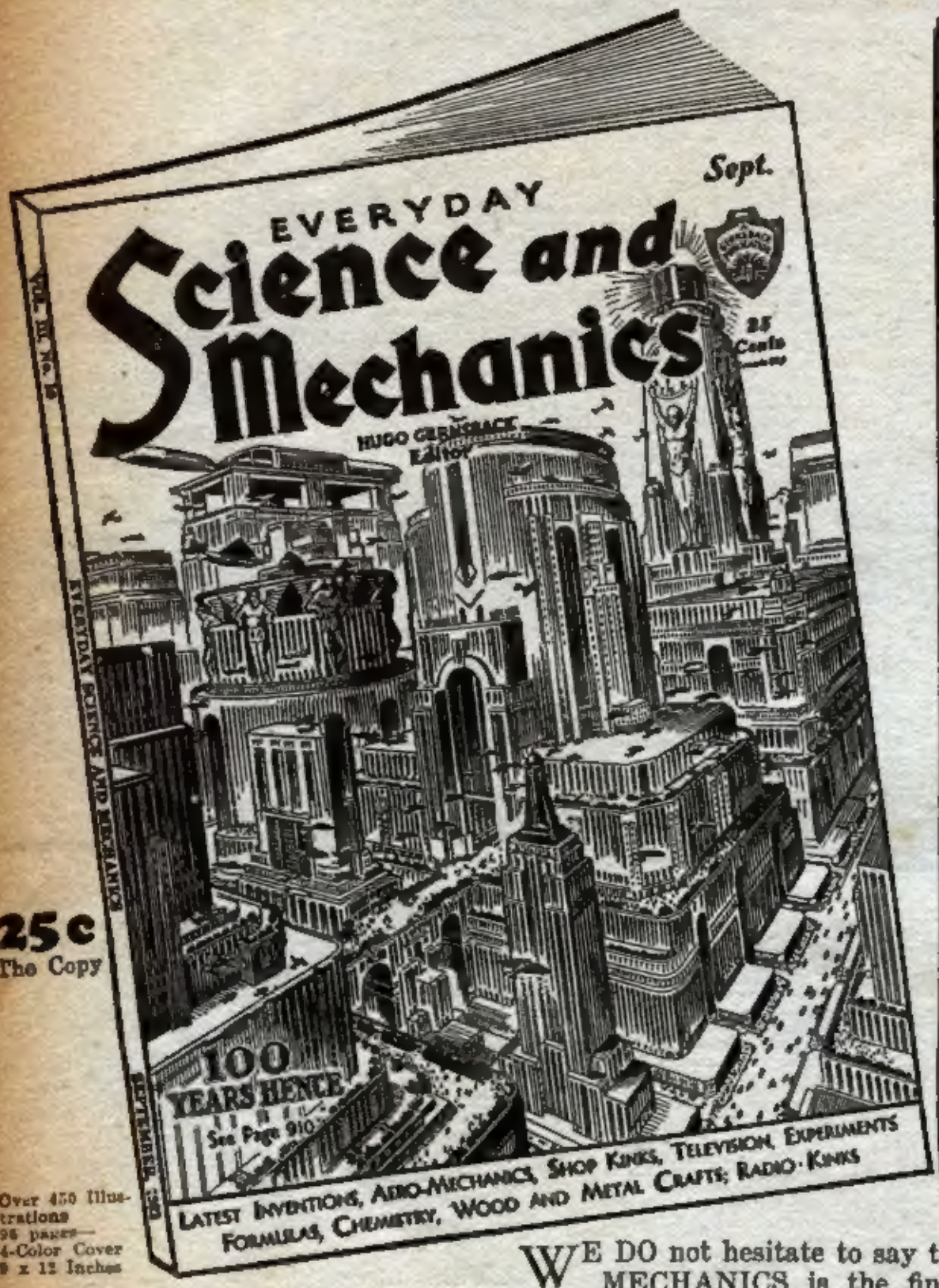

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EDITORIAL PAGE
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WONDER Stories

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WONDERS OF SIGHT

An Editorial By HUGO GERNSBACK

When it comes to downright, almost miraculous wonders, perhaps the marvels of eyesight deserve first place.

If you can imagine a sightless, but highly intelligent, entity, unfamiliar with visual phenomena, it would probably be most difficult to convince him of the extraordinary complexity of the visible world.

Accustomed as human beings are to see, we cannot appreciate the magnitude of the phenomena of "seeing" until we investigate them more closely.

The eye is surely the most wonderful, as well as the most complicated, of organic developments; volumes have, can and will be written upon the subject without exhausting it. Eye specialists who have made a life study of the subject confess they have not even scratched the well-known surface; and it may be ages before we know even half that is to be found.

There is indeed, no photographic apparatus built, and I fear we never can build one, that can rival the animal eye. The camera may duplicate the human iris, it may duplicate the "crystalline body," it may even duplicate the accommodation apparatus—which makes it possible for the eye to focus automatically on a nearby object or on one at a distance—but no photographic apparatus will conduct an image in colors to a distance; and this is precisely what the eye does—because the colored images are conducted through the optic nerve into the brain.

That, in other words, is television in colors. Indeed, as I have remarked in many articles before, the human eye is really the most efficient television apparatus in use today. Nothing invented, of a mechanical nature comes anywhere near approximating the human eye. The best television apparatus today must use a so-called scanner—a whirling disc with holes breaking up the incoming image. The eye does nothing of the sort; it does not really scan; but it can see "at a glance" a stationary image or even one moving at a distance, which no television apparatus may do.

Most people do not realize that we actually see the world upside down, just as a camera does. This tendency is corrected from childhood on, when the child begins to unlearn the upside-down world; but observers have noted that an infant will invariably grab a toy at its left, when it is actually at the right. At one time it was thought that there is some mechanism in the eye that turns the image around and presents it the right way up in the brain, but this is not the case.

More remarkable than all this, of course, is the fact that the eye is not only an optical apparatus, *but a living one*, as well. Not only the lens, but the iris and everything else connected with the eye is living and is of animal origin, and the eye as a whole is, of course, subject to the will of the user. Yet in many cases the functioning is entirely automatic. Thus, for instance, when too strong a light falls upon the eye, it is automatically protected by the iris, which closes up, allowing only a minimum of light to fall into the eye. Just a small detail, but a marvelous one if you come to think of it. When we come to the sensation of sight, the wonders increase amazingly. It is found that the back of the eye contains a substance called "visual purple." Imbedded in this are the "rods" and "cones" from which the sight sensations are carried through to the brain through the optical nerve. It has been estimated that the human eye, for instance, contains no less than 50 millions of such rods and cones, which convey the light impressions through the large bundle of nerves, which we call the optic nerve. This nerve connects the eye proper with the brain; but how the sight impulses get to the brain, and how we "see" an image, is something that is not known.

It is suspected that we are dealing with photoelectric phenomena; but, even conceding that this is the case, the theory still does not explain how we actually see, nor why we see in colors. We can follow the mechanism only so far. Then we come to a blank wall, beyond which nothing is known. We know, of course, that actual light rays do not penetrate beyond the eye.

Science understands today, that some sort of transformation takes place, whereby the light rays are converted into some other form of energy; but of what that is, and what actually makes us see—and not only see, but see in colors and see plastically (stereoscopically) nothing whatever is known at present.

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(*Illustration by Paul*)

Crowds stormed a space port of the Venusian Navigation Company. In one instance the troops themselves rebelled and slew their leaders. They manned space ships and launched them.

THE PLANET OF YOUTH

By STANTON A. COBLENTZ

● All of our readers will remember the "Florida boom" of 1925-26 when hundreds of thousands of people rushed southward to a land supposed to endow everyone with health and riches. The pricking of the bubble, leaving scores of thousands stranded in Florida, is not forgotten either.

The same emotional qualities, the same credulity and the same desire for health and riches may animate the race when other planets are explored. And again it is certain that the race will become victims of unscrupulous and crafty men. Suppose there were a planet of perpetual youth? Who would want to live on earth, and toil away only to meet inevitable old age and death? Who would not sacrifice everything for the boon of living forever?

Here is truly an engrossing theme; and Mr. Coblentz has treated it with his usual skill and with his sharp edge of satire and humor. And it comes to a surprising ending that is a masterpiece of drama and realism.

● When the Langley-Audubon Interplanetary Expedition set off for the shores of Venus, few spectators could have foreseen that the results were to constitute a glittering promise and a dagger-edged threat to the succeeding generation.

By the closing decades of the twentieth century, interplanetary navigation had already become as much of an accomplished fact as was aviation in the opening decades of the same century. The Spearhead type of rocket ship, propelled by the successive explosions of a hydrogen-oxygen mixture, had been developed sufficiently to permit successful flights not alone to the moon, but into the great void tenanted only by comets, meteors and asteroids which stretches between the earth and Mars.

But although several successive groups of adventurers had projected themselves ten, fifteen or twenty million miles into the abyss and yet had returned safely to earth, it was not until the advent of the Langley-Audubon Expedition that a serious attempt was made to reach the surface of any planet more remote than our own satellite.

It was little more than a generation ago that Wilbur Langley and his able associates developed their duo-chambered rocket device, which prodigiously increased the power of space ships by making possible simultaneous hydrogen explosions in two or more compartments; and it was as recently as 1989 that they startled the world by applying to the Pan-American Government for a license to operate between the earth and Venus. Most of my readers, I am sure, will recall the furore of newspaper and radio publicity that accompanied the granting of the license, and the fervor of interest with which "space fans" throughout the world followed the preparations of the pioneer explorers of Venus.

For fear of prolonging my narrative unduly, I shall pass briefly over the preliminaries . . . it is known to all well-informed persons today how the super-spaceship *Astra* was built and equipped, and how, with her gleaming javelin-shaped hull shining beautifully in the sunlight of a July morning, she was launched into outer vacancy with six of the most daring adventurers that ever left this planet.

That the flight was successful seemed at first to be undeniable. Repeated radio reports, received from the wanderers as they winged their way through the vastness between the worlds, told that all things were proceeding according to schedule, and that the travelers were less impressed by the hazards of their voyage than by its monotony . . . Finally, after the passage of thirty-five days, came an exceedingly faint message which the powerful awaiting amplifiers on earth, magnified into the assurance that Langley and his companions had alighted on Venus!

And then how great was the rejoicing on earth! how many the gay flags that were swung to the breeze! how triumphant the songs and speeches of acclaim that resounded throughout our planet! how intense the wonder, the anticipation of extraordinary revelations still to come!

But had the jubilation been premature? So the more serious-minded began to ask when—following one or two more messages, indicating the specific region of Venus which Langley had reached—no further reports came to any of the radios attuned throughout the earth. Had disaster overtaken the explorers? Had they succumbed to the inimical atmospheric or surface conditions of Venus? Had they fallen a prey to wild beasts or savage men?

"More than likely!" murmured the pessimistic. But the more sanguine only smiled, and waited. And it was not until a year had expired, and no fresh word had come from the missing ones, and the time for their scheduled return was long past, that the last gleam of hope died in the hearts of Langley's waiting admirers on earth.

Even so, a plan was already afoot for a rescuing expedition. Not, indeed, that any one expected actually to save Langley and his fellow heroes! but that there was some thought of solving the mystery of his disappearance.

"A wild vision. A chimera!" cried some, who predicted only that more lives would be uselessly snuffed out; and the opposition was so great that more than five years had passed before the project showed prospects of success, and the consent of the Government was reluctantly given to what was generally considered no more than a forlorn bit of gallantry.

It was in this expedition—the famous Morse-Crandall Rescuing Flight of '95—that I was privileged to play a minor part. The sponsors of the project, who operated with the funds supplied by two of Pan-America's leading millionaires, had no difficulty in finding an abundance of intrepid men willing and even eager to make the voyage; but it happened that, at the eleventh hour, one of the scientists chosen for the honor was taken violently and mysteriously ill; and I, as a young chemical engineer who chanced upon the scene, was drafted to fill the vacancy even though the only merit I could claim was that of availability . . . Being still only in my twenty-seventh year, and full of the animation and vigor of youth, I not unnaturally welcomed the opportunity. None the less, it was with a sinking sensation of my own unworthiness that I entered the little slit-shaped door of the space ship and realized that I was soon to be one of the few representatives of my race in the outer universe.

● I well recall the reassuring attitude of my companions as we strapped ourselves into place in the little cylindrical room that was to be our home for weeks to come; but, by some trick or irony of memory, it is not so much the friendly smiles of the majority that flash to my recollection as the peculiar, almost saturnine demeanor of one member of the group.

Who can say what subtle, sinister forces, working through the still-unexplored byways of the subconscious, may summon forth an instant antipathy between two men who have never met before? Or is it that the ghosts of future conflicts may cast their shadows before them? At all events, from the moment I met Claude Pendexter, I was as one unwillingly brought face to face with an old enemy.

Like a haunting specter, his thin, wedge-shaped face comes before me as it was when I first stepped aboard the space ship; I see again the small greedy little black eyes which, for some reason that I could never quite explain, have always made me think of a cockroach; I observe the ironic drooping of the thin lips beneath their shreds of moustache, and hear the rasping voice pipe out, "All hands aboard! . . . In just twenty-nine minutes we leave!"

For Pendexter was our captain; and the thought that I should be subject to his orders did nothing to allay the unreasoning antagonism that I felt; while the knowledge that I had been thrust upon him against his will, as the substitute for one much more desirable, may have had something to do with the resentful overbearing attitude he always displayed toward me.

Were it not that I must rush on to more important matters, I would be tempted to dwell upon the dissensions between Pendexter and myself which marked our entire cruise and offered variety and amusement to our fellow adventurers: how he would make me stay on watch at the controls more than my fair number of hours, and how he would always assign me to the distasteful task of oiling and re-fueling the engines, and how he would take care that I got less than my due share of the stringently limited rations of food and water, and how he would gibe and sneer and make me the butt of outrageous jokes connected with my youth and incapacity.

But I pass over all this, although my blood frequently boiled, and often I would clench my fists and vow future retaliation . . . After a time, more important events were to occupy the attention of us all, and we were temporarily to forget our animosities in the exaltation of a tremendous experience.

For we were approaching Venus! After more than a month spent in a bewildering drift through emptiness, we were almost within striking range of the earth's sister planet! We saw the great cloud-covered ball but a few thousand miles beneath us, intolerably brilliant where the sun blazed upon its silvery vapors; black and forbidding where the reflection of the stars made a ghostly radiance on the night-covered side. But our minds, our hands, our eyes were now occupied not so much with this fascinating spectacle as with the terrible problem of a landing. By means of counter-explosions of fuel, precisely timed, we had gradually to overcome our speed of more than ten miles a second; we had to divert our course so as to fly almost parallel to the surface of Venus; and sinking down by calculated degrees through some propitious rift in the clouds, we had to select some advantageous landing place and reach it at a velocity not so great as to destroy either our machine or ourselves.

The plight of an earthly aviator, caught in a storm, blinded by the mists, and forced to descend in an unknown region bristling with crags and glaciers, could be little more precarious than was our own. I shall not linger, however, over the harrowing few hours we spent as we made our way recklessly through the vapors of the upper Venusian atmosphere . . . to come out at length over a region of tremendous rolling plains and green mountains, singularly like some unpopulated wilderness on earth.

"Thank God!" we all cried, in an access of spontaneous joy. "Thank God! We are saved!" And we fell upon each other's necks and shoulders, weeping and shouting in an ecstasy of relief and happiness.

A few moments later there came a shock that knocked us all off our feet; then a few shuddery jerks and tremors—and all was still. Recovering ourselves, we flung open the doors of our little prison for the first time in weeks, and stepped out upon a lush green soil glowing with a faint phosphorescence. And standing in the brilliant torrid sunlight and inhaling an atmosphere that blew in delicious gusts to our impoverished lungs, we fell upon each other's necks once more, and wept in irrepressible delight.

● Our preliminary explorations introduced us to a planet remarkably similar to the earth—and yet strikingly different. It was as though we had returned to our own world, only to find it marvelously brightened and rejuvenated; as though we had found it grown younger by several geologic ages; and had seen it restored to the Jurassic or even the Carboniferous era. We had descended in an opening in a wide forest, at the borders of a sluggish stream fringed with tree-ferns a hundred feet high, and with a palm-like plant whose thick sword-

shaped leaves were succulent as honey.

Amid the verdant confusion of the jungle just to our rear, we observed glowing red and yellow and deep-veined blue and purple flowers in bewildering luxuriance; brilliant scarlet and saffron-hued fruits which, upon testing, we found most tempting to the palate; orange-tinted and lavender berries as large as tomatoes and as delicious as peaches; cucumber-shaped nuts nutritious as meat, and edible young shoots and creepers of a thousand varieties . . .

In short, the district was not only attractive to the eye, but—more important—it offered facilities for the indefinite perpetuation of human life.

Yet, in the limited region within our observation, no human life except our own was to be seen. Even the higher animals, as they are known on earth, appeared to be totally lacking; though some crocodile-like saurians were flapping in the shallows of the rivers, and now and then a bird-like reptile reminding us of the long-extinct pterodactyl went zizagging at our feet and beat against our lamps at night. But, search as we would, we could catch neither sight nor sign of either bird or mammal, and so were led to conclude that Venus today was in a state like that of the earth before the appearance of the first warm-blooded creature.

Yet we ourselves—although a few millions of years premature according to all the rules of evolution—appeared to thrive most gloriously in the atmosphere of our new home. Before we have been in Venus more than a day or two, a glow of rosy health appeared on the cheeks of us all, and, by some process almost miraculous, we had recovered from the rigors and exertions of our long voyage through space.

Although the air was warm (constantly between 70 and 90 degrees Fahrenheit, according to our thermometers), it seemed to invigorate us as men on earth are invigorated only by a cold climate; and even the extreme humidity, occasionally relieved by thunderstorms of a severity unparalleled on earth, seemed to have no power to diminish the sense of well-being and the exhilaration which we all felt. Was it the greater brilliance of the sun on Venus, the greater energizing properties of his rays, which accounted for this enlivening influence which we all felt? So we asked ourselves at first; but in time another explanation—and one with the most wide-reaching consequences—was to present itself to certain members of our party.

In the beginning, we could permit ourselves little time for theories or speculations, or even for an examination of the fascinating flora and fauna and the other features of our environment. Not for one minute could we forget that we had come to Venus with a mission—a mission which, however remote its possibilities of success might appear, was to be pursued with an unswerving devotion.

The members of the Langley-Audubon Expedition, whom we had been sent to rescue, might for all we knew be still alive and in imminent need of help, and therefore all other objects must be subordinated to the search for them. But would not the proverbial needle in the haystack be easier to find than half a dozen men on a planet virtually as large as the earth? Fortunately, we had several clues: we knew the latitude in which the lost explorers had descended, and were aware that it corresponded roughly with our own; and we had, moreover, the use of the radio, which knows neither latitude nor distance, and might be more effective in a search than a thousand eagle eyes.

Or so, at least, we found it to be in our own case . . .

STANTON A. COBLENTZ

I shall spare the reader the account of the initial trials we made with our powerful transmitting apparatus; the repeated signals which, though calculated to reach the remotest spot on Venus yet brought us no response. But what are a few weeks of failure in an undertaking so stupendous as ours? After all, it was such a short while before we were crowned with success! True, we had already given up hope, had already persuaded ourselves that we were the only living men on Venus . . . when one evening we observed the listener at the earphones go pale, and then clutch at the radio apparatus with such fervid intensity and stare into vacancy with such fierce eagerness that we wondered if he had parted company with his wits . . .

While we still watched him, in a frenzy of impatience and wonder, the man began acting still more strangely. With the earphones clapped tightly about him, he reached toward the waiting microphone, and began to speak—to speak in jerky, broken accents that ill-concealed his palpitating excitement.

"Langley—Audubon!" he shrilled. "Is it you? Is it you?" . . . Then there followed a silence that seemed to last for minutes, though actually it may have been only a few seconds; then once more the quivering voice rang forth, "No, not from the earth! From Venus! We speak from Venus! We have come to rescue you! . . ."

And once more a long silence intervened, before the speaker, with face by turns flushed and bloodless, put down the earphones, and exclaimed to us, in breathless agitation, "I can't—I can't get another word. It's the static—the accursed static!"

CHAPTER II

The Exile

● But communication had been established—and it was now only a matter of days before the essential information had been exchanged. We learned that all six members of the Langley-Audubon Expedition were alive and well; that they had been stranded upon Venus due to the wrecking of the space-ship *Astra* upon their arrival; that they had been forced to suspend their radio messages to the earth because of the exhaustion of their electrical power, and that during all the intervening years they had been experimenting to find fresh electrical sources . . . with the result that they had only now put a new radio into operation, in a frantic if forlorn effort to reach the

earth. It was thanks to this radio that they had caught and returned our message, and that the purpose of our expedition seemed about to be fulfilled.

To determine the precise location of our fellow explorers and to cover the intervening distance was now a question only of routine. By means of precise astronomical observations, we learned that the distance between us was, roughly speaking, about a thousand miles—a mere nothing when traversed in our space ship, which launched itself to a height of several hundred miles, and then slid down in a graceful curve to within a league or two of our attempted destination.

To cover the remaining distance afoot was more inconvenient than difficult, although we tore our clothes repeatedly on the dagger-edged thorns of a cactus-like plant as we made our way slowly along a winding stream. But how well we were repaid when at length we came out into a clearing featured by half a dozen straw-covered huts! How great was our rejoicing when six bearded men, clad only in loin-cloths of some palm-like substance, rushed forth to greet us!

How we exulted to recognize Langley and Audubon and their gallant associates! How profoundly we were touched at the tears that came into their eyes, at the quivering in their voices as they took our hands and clapped us about the shoulders, at the pathetic tightening of their fingers in ours, as though they were loth ever to free us from their clasp!

When the first enthusiasm and clamor of their greetings was over and we had time really to observe these newfound fellows of ours, we received a fresh and by no means unpleasant surprise. Whereas we had expected to find them worn and withered by the hardships of exile, they all appeared to be glowing with health and vigor. More than that! They all had a startling aspect of youth! Langley, the leader, showed a clearness of complexion and a buoyancy of manner that would have proclaimed him to be not a day above thirty, yet I was aware that he must be closer to forty; while his followers all had that unclouded freshness which usually attaches to youths of twenty-two or twenty-three—although it was not to be supposed that they had been but sixteen or seventeen at the time of embarking on the expedition.

"Yes, the Venusian climate agrees with us," they remarked, when we commented upon their unusual vitality; but, beyond this, they had no explanation to give, nor did anything suggest that extraordinary explanation which was later to intrude itself.

The imminent problem now before us was of course that of our return to earth. Due to the stringent limitations of space our ship was equipped for six men, and six only; however, we had hoped that the *Astra*, the vessel of the original expedition, would be able to convey any survivors of the Langley-Audubon party back to earth. But the *Astra* had been battered beyond repair by the shock of its impact with the planet; and, accordingly, six men must still remain on Venus upon the return of our own vessel. Which should they be?

To our surprise, Langley and his companions all expressed themselves as highly pleased with life on Venus, which they described as simpler and much less troublesome than existence on earth; and two of them went so far as to deny any desire to return, while the other four professed a wish to return only temporarily, for the sake of re-visiting old friends and relatives.

Owing to the duration of their exile on Venus, we all decided, these four should have the opportunity to fly back immediately to earth; for could not a further expedition relieve those now left on Venus? This meant that, of Pendexter and his five assistants, all except two would have to remain. Deplorable as this may appear at first sight, it really gave us little cause for concern, since we were all anxious to see more of Venus; indeed, there was much friendly competition among us to determine who should be the fortunate ones privileged to stay.

● But our own wishes were not to be the deciding factors.

It was Pendexter who, as our captain, had the right to make the decision for us. And, had we only been halfway wise, we would have foreseen his choice. One afternoon, after our space ship had been re-stocked with water and provisions, he called us all about him by the borders of a little pool where fish-like reptiles twisted and sported. The scene comes back to me to the last detail: the red soil faintly, almost indefinably glowing, in that weird manner noticeable in most parts of the planet; the fish-lizards occasionally picking themselves up on rudimentary legs to waddle at the water's edge; the twenty-foot leaves of the tree-ferns rustling like green lace in the breeze; while between rifts in the heavy clouds an intolerably brilliant sun would now and then look forth, to be lost almost instantly in a blur of vapors.

But more clearly even than that vivid scene the face of Pendexter flashes back to my mind. I see the malicious leer on his thin face, the venom in his snapping black eyes as he cast me a glance none too reassuring and cleared his throat to speak. "We all, naturally, wish to stay here," he rasped—and he spoke with a deliberate, an ominous slowness—"but our ship must have its required crew of six, and so two of us must fly back. It goes without saying that I, as captain, must remain with my vessel; and so of the five of you, only one need be chosen!"

He paused, and the glitter in his black eyes seemed malignant; and my heart sank until it seemed to go down into my stomach as his hand swung out in my direction, and he resumed in the screeching tones I always found so repugnant:

"Naturally, the least experienced, the least capable of us must go back to earth! Forsythe, you will make ready to accompany me!"

Even amid the writhing pain of that moment, I did not miss the low sighs of relief uttered by my companions, nor fail to note the joy in their eyes at being permitted to remain on Venus.

It was to be expected that the return of Pendexter and myself, along with four members of the Langley-Audubon expedition, should create a sensation on earth. It was to be expected that, for some days or weeks, the news from Venus should outrank all other news in the pages of the press and from the mouth of the radio.

"Langley rescued!" rang forth the tidings that for the moment overshadowed the reports of boxing matches, and football games, and political contests and international conferences and all those other sporting events with which the minds of men are apt to be regaled. And, for the moment, there was no schoolboy so obtuse, no housewife

so unenlightened as not to be able to discuss interplanetary travel . . .

With public enthusiasm at fever pitch, and public curiosity genuinely stirred as to conditions of life on Venus, it was inevitable that other expeditions should follow. It was a matter only of days, indeed, before several philanthropists had subscribed the sums necessary to equip a giant space ship capable of reaching Venus in a minimum of time, and of bringing back, if need be, all the men now marooned there.

Yet much more than a year had passed before the flight could actually be undertaken, for by the time the new vessel was ready, Venus was approaching its point of opposition to the earth (at a distance of about 150,000,000 miles, with the sun offering an impassable obstacle between); and it was therefore necessary to wait for the favorable conditions of our conjunction with Venus, when a mere 25,000,000 miles would intervene.

Had it not been for the long unavoidable interval, I should unquestionably have been a member of the new exploring party. Although Pendexter (much to my chagrin) had been selected to lead the expedition, I too had secured a certain measure of public recognition; and while he did everything possible to belittle my claims, it is hardly likely that he would have been able to exclude me from consideration.

But he was not one to hesitate at craft when open action would not avail. It was thanks to his machinations, as I subsequently learned, that the Pan-American Government dispatched a group of chemists and engineers to investigate the mineral deposits of a remote Alaskan range; and it was owing to him, likewise, that I was appointed to a subordinate position in this party. Since a Government appointment, in the late twentieth century, was tantamount to a command, I had no choice but to pack my baggage and set off for Alaska; and since there was no possibility of returning by the date set for launching the new interplanetary expedition, I was automatically excluded from the personnel of the space ship . . .

● As I trudged, with a pack on my back, along the ice-trails of the Far North, I could picture the grimace of sly satisfaction that appeared on Pendexter's Machiavellian face as he contrived to exile me from everything my heart most desired. I could picture the smirk of gleeful triumph with which he stepped into the waiting space ship, the self-important air of command with which he gave orders to the crew; and I followed him in fancy through all the days of the weird, rocket-like flight . . .

And standing at evening on the shoulder of a flint-ridged mountain, and gazing to the west where a bright planet shone in solitary splendor above the jagged horizon, I clenched my fist and remained long in revery, vowing that I should again cross the abyss to that other world, and that neither Pendexter nor a host of Pendexters should deter me . . .

But it was to be long before I could act upon my determination. More than a year went by uneventually for me; more than a year in which, even in my Arctic wilderness, I heard much of the doings of Pendexter, who had reported by radio his safe arrival in Venus and was promising an early return. Nor did my sense of injury diminish when I learned that he was rapidly becoming the world's idol; nor could I suppress the cold and jealous rage I felt at the knowledge that his reappearance on earth was to be the occasion of a triumphal ceremony presided over by no less a personage than the Pan-American Dictator, and attended by ambassadors, statesmen from half the earth.

Only one consolation I had at this exaltation of my enemy. My own term of exile was approaching its end; and, as a member of the previous interplanetary expedition, I was to have a position of honor at the ceremonies, and was to be one of the delegation which was to receive the returning adventurers. Here at least was salve for my wounds! Yet how I shuddered at the irony of having to extend an official welcome to Pendexter! It seemed that, even in the honors I enjoyed with him, there was a sting of humiliation!

At length came that day of nerve-racking excitement when Pendexter was due back on earth. Radio messages, on the previous evening, had reported him as not more than some seven or eight thousand miles away; and it was officially stated that he would descend precisely at noon on a great field prepared on the outskirts of Washington.

I shall not pause to describe the tumultuous crowds, numbering deep into the scores of thousands; the banners, the drums, the bugles, the noise and the acclaim; rather, let me plunge forward to but a minute before the space ship's scheduled re-appearance. Suddenly, through the deep sun-obscuring clouds directly above us, there burst an object that might well be from another world. Fish-shaped and tapering gracefully below, it looked like a projectile fired from some Brobdingnagian gun, except for the hissing spurts of vapor that erupted in continual explosions from valves along its sides. As it descended, falling with a rapidity that alarmed us, huge tenuous wings flashed out along its silvery flanks, steadying it and lending it balance . . . Meanwhile the explosions of vapor continued and even grew in violence; until all at once, with a suddenness that seemed miraculous, the space ship came almost to a halt, bobbing up and down a hundred feet in air, and then slowly, very slowly sank to earth, while the marvelling spectators wondered through what expert technical adjustment the explosions have been regulated so as almost exactly to counterbalance the attraction of the earth.

Now, after several minutes of breath-taking silence, the doors of the vessel were flung open, and the ten occupants one by one stepped into view. As a member of the waiting committee of reception, I gasped in amazement—how well the men all looked! First there was Pendexter who, despite his long confinement in the space ship, walked as spryly as a stripling, and displayed a glow of superabundant vitality on his usually pallid cheeks. Then there were several members of his crew, all of them abounding in youthful vigor; and, finally, there were the four companions of my own interplanetary flight, all of them radiant with health and more youthful-looking than when I left them nearly two years before!

CHAPTER III

The Great Idea!

● Even amid the joy of our meeting and the distractions of the subsequent reception, a stirring idea was tak[ing]

form in my mind. I cannot recall the exact moment of its inception, although it is probable that it had long been latent in my subconsciousness. Now it seemed to burst upon me almost full-born, with a shock, a revelation so startling that for a while I felt like one reeling in mid-space.

All at once, as I gazed at my strangely virile and rejuvenated comrades, I understood much that had mystified me regarding Venus. I understood the exhilarating effects of its atmosphere; I understood why Langley and his companions had not appeared to grow older during their exile; I understood why life to our neighbor planet seemed not to add years to life but to subtract them. And I was in possession, it occurred to me, of the most priceless secret ever conferred upon any member of my race!

As one trained in chemistry, I had not failed to recognize the meaning of that faint phosphorescence which permeated the Venusian soil. Venus, being a younger world than ours, had not yet lost all of her original radioactivity; even today, radioactive substances cast their healing emanations about them with prodigal luxuriance. This I had realized even while visiting the planet; but what had not occurred to me then was that the emanations might have the effect of checking the processes of death and decay in the human system—the effect, in other words, of producing a perpetual rejuvenation in the individual exposed to their influence.

What an alluring, what an unbelievable vista this presented! If the processes of decay were checked—or if, to be precise, the growth of fresh cells was stimulated to such a degree that no organ could waste away—then there could be no such thing as death from disease or old age. Old age, in fact, would be an impossibility; while any man who could escape death by accident or violence would live forever!

So revolutionary, so all-significant did these conclusions seem that I was reluctant to accept them without compelling proof. Although it already appeared to me that there was little reasonable room for doubt, I hesitated to credit the testimony of my own senses; but, wishing to put the matter to a fuller test, spent several days of painstaking research in digging out old copies of magazines containing photographs of Langley, Audubon and the various other explorers. And in every case the results confirmed my surmises! In no case did the man today look older than when photographed eight or ten years before; and in at least half the instances the subject looked younger, having overcome facial linings and wrinkles and other distortions plainly revealed by the camera! In fact, the degree of rejuvenation seemed exactly proportionate to the time the person had sojourned on Venus!

The last shred of doubt having been dissipated, I began to conceive a breath-taking project. If all that one had to do in order to become immortal was to migrate to Venus, who would wish to remain on earth? Why should not a great Venusian colonizing company be organized?—a syndicate that would undertake to build and operate a fleet of interplanetary liners, and to transport settlers at regular intervals to our neighbor in space? Thus, apart from the opportunities for gain—which, great though they might be, would prove of secondary interest to any lover of humanity—one might bestow the boon of immortal life upon myriads of our race and might provide the chance for men to develop a richer and more satisfying civilization than was ever possible on earth.

Aglow with enthusiasm for this idea, I resolved to seek the backing of some powerful financial group and to request a charter from the Pan-American Government for the operation of a squadron of space-ships. But alas! although I well realized that I must keep my plans from all but the most friendly ears, my very eagerness and fervor were to betray me. Hardly had I completed my plan of action when I dashed off to the Interplanetary Club to seek my old friend Dunmore,—one of my companions on the flight to Venus, who had recently returned with Pendexter.

As ill luck would have it, I found Dunmore in the reading room, absorbed in a copy of the "Astro-Physical Digest;" and as my enthusiasm prevailed over my discretion, I did not trouble myself to lead him off to some secret nook, but, observing that we were alone together, launched at once into an announcement of my discovery and a discussion of my plans, and solicited his enlistment in a project which, I felt, should appeal to him profoundly.

I had just completed the preliminaries, and had gotten to the point of proclaiming, "I tell you, Dunmore, if we form a secret syndicate, it cannot help succeeding!", when some warning instinct cut me short and turned my gaze behind me. There on an easy chair, grinning with amusement, sat my friend Pendexter! How he had gotten in without our knowledge I cannot say; but doubtless my incautiously lifted voice accounted for his presence, while I had been too preoccupied to notice him as he slipped stealthily into the room.

"What in the devil's name do you want here?" I growled, as he still stared at me. And my heart was as though turned to ice within me, for I wondered how much of our conversation he had overheard.

"Oh, I just thought I'd do a little reading," he drawled, tauntingly, as he slowly rose and went slouching over to the magazine shelves. "Hope you don't mind, Forsythe?"

● And when I, stricken speechless, could only glower back at him in helpless indignation, he turned around so as halfway to face me, and mumbled, "Wonderful idea that about the syndicate, Forsythe! Yes, a wonderful wonderful idea!"

And, secretly chuckling, he began to finger a magazine; while I, red-faced and with fists clenched, leaped to my feet and sputtered, "But, Pendexter, you—you don't mean to say you—"

He turned toward me with a look of infinite scorn. "I don't mean to say anything at all," he muttered. "Only thank you for your suggestions. Thank you most kindly. Luckily there's no copyright on ideas."

And, chuckling once more, he went rambling on his way, leaving me to sink back into my chair with a moan, for now my project could succeed only in the face of a most powerful and unscrupulous opposition.

Regardless of the shadow which Pendexter had flung across my path, I had no choice but to proceed as though he did not exist. Stimulated to more intense efforts by the certainty that he would attempt some obstruction, I paid hasty visits to several leading capitalists, and had little trouble in enlisting their sympathies—and, more im-

portant, in securing their subscriptions—for an interplanetary ship line to be known as the Venusian Navigation Company.

True, so deeply were my backers sunken in the grasping philosophy of the age that they had little thought of bestowing any benefit upon mankind, but looked only to the enlargement of their already-swollen fortunes, on the view that an interplanetary freight and passenger service would provide a fruitful new channel for business enterprise. None the less, the fact remains that they were not slow about their guarantees of assistance . . . . so that, within a few weeks, my dream seemed about to be converted into reality.

It was with a heart violently throbbing that I rushed away one morning to the office of the Ministry of Transportation, bearing a portfolio with the documents and affidavits outlining the plans and prospects of my proposed undertaking. My enthusiasm still undimmed by the ordeal of standing in line for several hours, and of filling out numerous blanks to be filed away by a machine especially invented for the purpose, I found myself at last in the office of the Head Clerk, who glanced at me formally, turned a perfunctory eye upon the application sheet I held in my hand, and then announced, in a manner as impersonal as a rubber stamp:

"Number 4554 GX! Petition refused! Next!"

For a moment I could only stare at him speechlessly. "Petition refused?" I at length managed to gasp. "Why, there must be some mistake! On what grounds do you refuse me?"

"Number 4555 GX, you will step forward!" the Head Clerk was calling in his most mechanical voice to the next in line. And after another futile effort to gain his attention, I realized the uselessness of remaining to argue with an automaton, and went staggering out of the room like one in a daze . . .

But, even amid the stabbing pain and disappointment of that moment, my mind was not so utterly bewildered that I had no intimations as to the cause of my failure. For I had a vision of the grinning wedge-face of Pendexter, and saw the unholy glee of triumph in his beetle-black eyes and, surely, I was doing no injustice to my rival to suppose that he had outmaneuvered me.

Only a few days later after my appeal to the Director had been dismissed without comment telltale rumors began to reach my ears. "Say, what do you know about Pendexter?" my friend Bellaman, also of Venusian fame, startled me by inquiring one day as we lunched together at the Interplanetary Club. "I understand he has a tremendous project afoot."

"Tremendous project?" I demanded, while a chill went down my spine and it seemed to me that I could surmise all that Bellaman had to say.

"I don't exactly know the details," he continued, in a leisurely way, between puffs at a cigar. "But there's been a good deal of talk among the boys that he's taken out a charter for an interplanetary ship line to be known as the Venusian Navigation Company . . . "

Amazed as Bellaman was at the look of mingled rage, horror and astonishment that convulsed my face, and at the way my whole frame shook, he was probably not less mystified at the muttered exclamation that escaped my lips, "The hound! The brigand! He's stolen my idea!"

It was now fully evident why the Ministry of Transportation had refused my application. Pendexter, acting upon the plan I had unwittingly suggested to him, had been able to secure the necessary guaranty of funds even more rapidly than I, by reason of his world-wide reputation as an interplanetary explorer; and, anticipating me in his application for a charter, he had brought sufficient influence to bear to be granted a monopoly on Venusian navigation!

● Suppressing as best I could my wrath that any government should be arrogant enough to offer a monopoly of the skies, I resolved to take the sole course still open to me to go abroad, and try to induce the great Euro-Brittanican Government or the equally great Russo-Asian Government or even the Government of Pan-Africa to bestow the privilege denied me by my own country.

Accordingly I hastily packed my suitcase and dashed off to the nearest airport, where I boarded the first trans-Atlantic plane I could catch—to arrive twelve hours later in London, and arrange for an interview with the Minister of Foreign Affairs (the official who, in Euro-Brittanica, had charge of interplanetary matters.)

Even before the hour set for my reception by this dignitary, I was to receive another shock. Picking up a Pan-American newspaper as I left the airport, I observed with a gasp the following headlines:

"FAMOUS SPACE-VOYAGER FORMS GREAT SYNDICATE

"To Put World-to-World Travel on a Paying Basis."

Although the paper trembled in my hand like a leaf in an autumn gust, I managed to retain sufficient presence of mind to read:

"Claude Pendexter, celebrated space-man and leader of the Morse-Crandall Rescue Flight to Venus, announced today a scheme which he believes will revolutionize space travel.

"Backed by numbers of our leading financiers, whose names he has not divulged, he has taken out papers of incorporation and received a Government charter for a company which plans to build a fleet of space-liners and to operate them at established intervals between the earth and Venus. The concern, however, will be more than a navigation company, for it aims to colonize Venus, and each person securing a passage to that planet will be given the title to a considerable strip of land there . . . The price of a passage, it is said, has been tentatively fixed at $50,000.

"Aside from the manifest advantages of settling in a new and less crowded planet, Pendexter maintains that the emigrant to Venus will gain a boon more priceless than gold. His own observations, he declares, have taught him that the soil of the planet abounds in radioactive substances capable of prolonging human life indefinitely, so that the settler there need have no fear of ever growing old or dying. For this reason, he himself intends to take up his abode there as soon as the affairs of the company are in such a state as to permit his departure."

I could almost have wept in my impotent fury as I perused this article,—this article which made so much more emphatic the treachery and theft by which Pendexter was profiting from my ideas. Nor was my anger in any degree abated when, upon visiting the Euro-Brittanican minister, I was told that Pendexter's company had already presented its application and secured the mon-

oply of interplanetary rights in Euro-Brittanica as well!

Speaking to me in a friendly unofficial manner (for, it seems, he had taken a personal liking to me, and wished to spare me much trouble), the Minister went so far as to state that Pendexter, by virtue of his international reputation, had been able to obtain the support of leading citizens in every important country, and was certain of being granted monopoly rights wherever he applied. Hence I was merely wasting my time and efforts in seeking a charter on my own account.

I wonder whether the reader has ever had the experience of striving desperately to find an outlet from some enclosed space, and of seeing new walls confront him in every new direction in which he turned. Only one who has had this experience will be able to appreciate my feelings as I dragged my way from the office of the Minister of Foreign Affairs. It seemed to me that, no matter where I looked, impassable iron barriers obstructed my view; Pendexter, with a diabolical skill, had barred and circumvented me to the point of helplessness, and nowhere in this world, it appeared, could I obtain relief against him.

Upon sober reflection I concluded that, since I could expect to have no share in the affairs of the Venusian Navigation Company, the most I could still hope to gain was to be among the emigrants to Venus. My record as one of the pioneer explorers of that planet should have entitled me to return; but alas! I might have expected that no such consideration would weigh with Pendexter who, as President of the Company, played true to form when he rejected my application to be enlisted as a member of the crew of one of the space ships.

● My only remaining recourse, it appeared to me, was to embark as a passenger. But I am not a rich man, and $50,000 was a vastly greater sum than I had ever possessed or hoped to possess. Certainly, on my salary of $2,500 as a Government chemist, I could never expect to save the required amount! Or even if, by being economical to the point of niggardliness, I could scrape together the passage sum in the course of thirty-five or forty years, woud I not be already too old to be rejuvenated even on Venus?

It was when I had reached the lowest pit of despair that most unexpectedly, thanks to the efforts of my friends, a well known philanthropist overwhelmed me with the offer of a free passage to Venus—which, he declared, he felt to be but my due owing to my services in the cause of interplanetary exploration.

Need it be remarked that I accepted most gratefully? Need it be stated that my heart beat with fresh hope as the prospect of immortal life on Venus opened out before me and that my head fairly whirled with joy as I rushed to the office of the Venusian Navigation Company and entered my name as a prospective passenger upon the next flight?

But, as on every past occasion, my enthusiasm was to be slowly snuffed out. One month, two months, three months went by, while I eagerly awaited word as to my assignment of quarters on a space ship—and in the interval many important movements and events, which I shall describe in the next chapter, were already under way. All my protests and appeals for haste brought no result, and I have no doubt that the Company's delay was deliberate, not to say malicious, and owed itself to orders from above; for when finally, at the end of the fourteenth week, I received the notification I had been awaiting so long, it was merely an official form that had been filled in to read as follows:

"Mr. Arthur Forsythe,
Dear Sir;

"We thank you for your application for a berth in one of our space ships, and are pleased to inform you that we shall hasten to act upon your request at the first available moment. For the present, we have listed you as No. 69,842 on our waiting list.

"With appreciation of your interest, believe us

"Faithfully yours,
"THE VENUSIAN NAVIGATION COMPANY."

CHAPTER IV

The Dawn of a New Era

● The organization of the Venusian Navigation Company marked the dawn of a new era not only for Venus but for the earth.

Yet neither Pendexter nor any of his associates could have foreseen the results of their undertaking, any more than Columbus could have foreseen the consequences of his attempt to reach the East by going West. The new epoch of history, variously known as "The Romantic Upheaval," "The Period of the Great Disturbance," and "The Modern Age of Mania," was so startling and so fantastic in its various phases and expressions that no mind not gifted with omiscience could have anticipated its course. Whereas Pendexter and his backers were seeking no more than their own advantage, they were soon to find that the whole world considered itself a partner in their schemes—and that the whole world was becoming as feverishly excited as the prisoner who sees his dungeon door suddenly ajar.

In order to understand the alarming turn of world events, we must consider precisely what the Pendexter group were planning. According to information which came to me from reliable sources, they were guided by two motives: first, to emigrate to Venus and there attain immortality; secondly, to make themselves fabulously wealthy by reserving to themselves the choicest lands on Venus, and by reaping the profits of an interplanetary commerce not only in passengers but in various articles of trade. Their chief source of gain was to be from the exportation of Venusian radium, of which they had located valuable mines; for this priceless metal, after being extracted from the pitchblende that contained it, occupied such a small amount of space that it could easily be accommodated even in the limited storage rooms of the space ships.

True, the Company encountered some difficulties from the high tariffs against interplanetary imports which were declared by the Congresses of all nations, on the ground that earthly industries must be protected; nevertheless, the profits from radium were such that the stock of the Venusian Navigation Company soared to mountainous altitudes despite all the levies that the ingenuity of statesmen could devise. And financiers throughout the world, observing the wealth that came to investors in the Venus-

ian project, began to be overwhelmed with the desire to risk their all in interplanetary securities.

At the same time as the monetary success of the Company was appealing to the cupidity of millions, the cunningly worded advertisements circulated throughout the earth were addressed to an older and even more fundamental impulse. The following is only typical:

"WHY BE LIKE DUMB DRIVEN CATTLE?
"YOU HAVE TWO CHOICES:
"TO STAY ON EARTH AND PERISH
or
"TO PURCHASE A FARM OR TOWN LOT ON VENUS
"AND BE YOUNG AND HAPPY FOREVER
"See your local agent of the Venusian Navigation Company"

Had the rulers of the nations been wise enough to realize where such appeals were leading, they would surely have stifled every one of the Company's advertisements —even if they had not stifled the Company itself. For Pendexter and his collaborators—perhaps without fully understanding the fact—were trifling with the most profound of human instincts: with the very life-urge, the lust of self-preservation, the force that lured Ponce de Leon long ago to search for a fabulous Fountain of Youth, the force that has flung millions of men into Crusades, and Holy Wars, and massacres, and persecutions, and self-tortures, and lonely pilgrimages after a promised salvation.

What the hope of a paradise of date-palms and fair women was to the warrior of Islam a thousand years ago, what the frenzy to avoid the torments of Inferno was to the Christian warrior of the same age—all this and more the allurement of Venus became to a world that had ceased to believe in personal immortality, all at once made possible. And when, moreover, the prospects were for an immortality of the most delightful kind—an eternity spent on a "planet of milk and honey," amid never-cloying enjoyments in a body that could never wither—then how was it humanly possible to resist the temptation?

And so, when by degrees the representations of the Venusian Navigation Company had seeped through the public mind; and had been verified by scores of independent observers, the whole human race began to be moved by one powerful desire. Wherever I went, I heard only one word on the lips of the people; mothers would whisper to their babes, "When you get to Venus, my dear . . ."; schoolboys would build their games around the theme, "When we get to Venus"; old eyes that had been glossed with listlessness would show a gleam of hope, and old tongues would murmur, "If we could only get to Venus!"; Young wooers would murmur deliciously to their maids, "On Venus, my love, on Venus . . ." while youths of ambition, and battle-scarred men in whom ambition had long been dead, the disappointed along with the sanguine, the world-weary along with the virile and the energetic, all joined in that tremendous chorus which echoed and re-echoed around the world, "Venus! Venus! Venus!"

● Many months to be sure, had passed before public enthusiasm had reached this heated pitch. But countless signs gave evidence of the rapidity with which the interplanetary fever was spreading. I need only cite a little experience of my own as an indication of the tides of insanity that were beginning to sweep our planet. After receiving the letter, reported in the last chapter, informing me that I was 69,842 on the waiting list of the Venusian Navigation Company, I naturally suspected that my ill fortune was to be accounted for solely by the malice of Pendexter. And so, wishing to throw him off the track, I sent in a fresh application for an interplanetary berth, signing myself by the first name that came into my head: Morton Williams, I think it was, or William Mortons. And after two weeks I received the formally worded reply: this time I was No. 146,877 on the waiting list!

In other words, even the deterrent of the $50,000 passage fee had not prevented more people from applying than the Company would be able to accommodate for years to come! During the past two weeks alone, more than 77,000 applicants had filed their names!

It is not to be supposed that the Company did not make Herculean efforts to meet the unexpected demands for its services. But space liners are expensive bits of machinery, and cannot be built in a day; while even after being constructed and made ready for flight, they can be safely navigated only by trained experts of whom there are not too many in the world, and moreover can be launched only during those comparatively limited perids when Venus is not more than forty or fifty millions miles away.

And thus it happened that when, after a year of intensive activity, the Company had a fleet of fifty super space ships waiting and ready, it was found that only thirty-five could be released within the succeeding twelve months, and that the total number of passengers to Venus would not be much in excess of fifteen thousand.

But after another year, it was promised, five hundred additional space liners would be ready, and scores of young men now undergoing training in space-navigation would be qualified to captain the vessels.

It was during the second year that alarmed observers began to see clearly the signs of the social and moral disintegration of the world. Already workers, disgruntled at the routine of labor that led but toward old age and death, were abandoning their jobs in all parts of the earth . . . unwilling to strive again until after their transportation to Venus. Already profiteers were preying upon the hopes of the credulous, selling them shares of stock in Venusian enterprises that existed only on paper, or soliciting their money on fraudulent promises to convey them across space.

Already these scoundrels whose deeds on earth had entitled them only to opprobrium and contempt were finding a fruitful field for activities on Venus; and already the Venusian Navigation Company had served as a tool for every species of large-scale miscreant.

It is a curious fact that, among the first migrants to Venus, were many who were being vigilantly sought by the police on earth . . . Here, for example, was a bank cashier whose books failed to balance by a matter of half a million or more, and who, after being vainly hunted by detectives in several countries, was reported to be establishing himself in a large estate on Venus. Or here was the Mayor of a city, a Governor or a Congressman who was being investigated for the misappropriation of public funds . . . and who, when the investigation had unearthed some facts he could not satisfactorily explain, was next definitely located on our fellow planet.

Or, again, there was the millionaire's son who, after

being imprisoned on a charge of murder, mysteriously escaped into a convenient space ship; and the leader of gangsters who, finding life becoming precarious on this planet, silently made his exit in favor of the world of radium and youth; and the bigamist who, not unjustifiably fearing that the fury of the law might pursue him on earth, disappeared one fine day with his second bride . . . to resume housekeeping on Venus.

When by degrees it became evident that so many of the passengers of the Venusian Navigation Company were persons of questionable character, suspicion was not unnaturally aroused; and rumors began to circulate that officials of the Company had accepted bribes from various refugees from justice, who thus gained the preference over more deserving applicants. But although some public action upon these charges was attempted, nothing ever came of it; for the individual under gravest suspicion, who chanced to be one of Pendexter's personal aides, was not to be found when an effort was made to deliver the summons; and no convincing denial was ever issued to the report that he had gone to Venus for an indefinite stay.

While the criminal elements in many countries were rejoicing at the unexpected enlargement of their sphere of activities and detectives and sergeants of police were waxing profane at the very mention of Venus, the mood of the population as a whole was one of perilous impatience. Goaded by the desire to reach Venus, and maddened by the thought of that planet's inaccessibility to the masses, thousands of men in every land were displaying a mutinous temper that boded ill for the future. Had they only halted at a refusal to work, their resistance might not have seemed ominous; but they went so far in one case as to storm the space port of the Venusian Navigation Company, in the effort to capture one of the vessels . . . and not until several scores had been killed and injured and the State militia had been called out was the uprising suppressed. In other cases, when no open encounter occurred, an outbreak was averted only by the intervention of the Government, which placed large contingents of troops on guard at all the offices and factories of the Company; while in one instance the troops themselves, finding not even military discipline proof against the enticement of Venus, rebelled and slew their leaders, manned one of the space-ships and launched it in the direction of "the planet of perpetual youth"—only to be drawn out of their course owing to their inexperience in celestial navigation and dashed to death amid the peaks and craters of the moon.

Yet all these events were only symptomatic. They were, in a way, like the faint distant rumblings that precede the thunderstorm . . . But before I describe that tempest which was to descend upon our world and threaten the very structure of civilization, let me go back for a while to more personal affairs, and recount my further efforts to secure a passage to Venus.

CHAPTER V

Flight

● The rising public clamor for transportation to Venus did not diminish my own anxiety to reach that planet. On the contrary, my eagerness was only accentuated; my sense of injury at being barred from Venus was so keen that I decided that indirect methods must serve me where direct had failed. In other words, since I could not walk in boldly by the front door, I would creep in by the back! since I was not accepted as a legitimate passenger, I would travel through space as a stowaway!

Now this idea, I must confess, was not original with me. It was suggested by newspaper reports that would-be stowaways had several times been detected by the police. True, I had never read of any successful attempt, and was aware that the apprehended wretches had been punished with long terms in jail; yet I thought that no risk would be too great with the goal of perpetual youth in sight. Besides, my knowledge of space ships was so complete that I hoped to succeed in finding a hiding-place where men less experienced had failed.

It would be pointless to dwell upon my first attempt, when I secreted myself among the oxygen tanks of a vessel expected soon to leave, and was at the very point of victory . . . only to find that the craft would be indefinitely delayed owing to a leak in one of the hydrogen tanks. Nor shall I pause to describe my second attempt, when the untimely arrival of another would-be stowaway led to my detection, and only the hasty passage of a banknote to the lackey who discovered us saved me from spending some months behind bars. Surely, the fates were against me!—as though, with some dextrous counter-stroke, they wished to vitiate every effort I made! or as though they aimed to warn me against some invisible peril!

Had I been superstitiously disposed, I might have read an omen in my repeated failures and have ceased to challenge destiny; and, indeed, I did for a moment have a queer restraining sensation, and from within me a voice did seem to cry, "Keep away! Keep away! If you value your life, keep away from Venus!"

But being of a sternly rational turn of mind, I merely smiled at what I thought to be an absurd fancy, and straightway began to lay plans for a third attempt at embarkation.

Within a few weeks the greatest of all the space-liners, christened *The Evening Star* after the planet of its destination, was to be launched upon its maiden voyage. A long, spear-shaped craft, more than five hundred feet from end to end and over forty feet across, it had been made possible by a new multiple-chambered hydrogen engine capable of generating several times as much power as any of its predecessors. On the day before this vessel was to be hurled into space, a public reception was held, at which visitors were permitted to pace about its decks and survey its luxurious cabins and furnishings. This gave me my opportunity: mingling with the swarms that gathered at the space-port, where the huge silvery gray ship was pointed heavenward like a windowless skyscraper, I managed after several hours to worm my way into one of the narrow doors of the craft and to wander with the multitude along the neatly polished aisles from deck to deck. Never was a trans-Atlantic steamer more gorgeously outfitted!

Space travel, it seemed to me, had reached the stage of luxury now that the passengers might enjoy cabins with beds, and observation rooms and reading rooms equipped with elegant lounges and divans (all, of course, fixed to the floors), and a gymnasium, and radio amplifiers to bear them concerts from earth, and electric lights,

and every other accommodation I could imagine except bath-tubs and swimming pools. But interesting as all this was, my mind was fastened upon a more important object.

Making my way downward in the direction of the storage-rooms, I at length found myself before a closed door marked with a peculiar red X.

"Ah!" I exclaimed to myself. "This is what I have been looking for!"

To the uninitiated, the door would have been impassable; but, thanks to my acquaintance with space ships, I knew how it could be unbarred by the pressure of the foot against a little catch on the floor. And so I deftly flung it open and slipped into the black recesses beyond; while my fellow visitors, if they noticed my disappearance at all, must have mistaken me for an employee of the company.

Yet do not imagine that my position during the next few hours was in any way enviable. Groping in utter darkness among steel packing cases laden with pemmican, chocolate, lime juice, dried prunes and the various other articles of an interplanetary diet, I crept to a point as remote as possible from the door; and then, in a cramped and hunched position about as roomy as that of an infant in the womb, I came to a halt in the fetid atmosphere at the end of a long passageway, and silently waited for my voyage to begin.

● But all at once, with terrifying suddenness, it came to me that there were worse dangers to fear than discovery. If the packing cases had not been lashed securely into place, they would be so flung about by the shock of our start that I would be mashed to a jelly. Or if I myself were not firmly bound, I could hardly reach Venus alive. Accordingly, I set to work once more, despite the handicap of the darkness, and, by means of ropes and straps that I had brought with me for the purpose, tied myself as tightly as possible to one of the bulkheads, meanwhile praying fervently that my efforts would suffice, and that I would not be dashed to death the instant our flight began.

The interval that followed was more harrowing than I should care to endure again. The minutes seemed like hours, and the hours like days, and meanwhile the silence and darkness of my self-imposed prison was so nerve-wracking that even the sound of approaching footsteps—even the footsteps of my foes—might have had a welcome ring in my ear.

But not the faintest stir, not so much of a trembling as a leaf makes when it falls on a hushed day, disturbed the absolute solitude of my retreat . . . until eventually, after eternities of torment, there came such a shock that my head whirled and the whole earth tottered about me. It seemed to me that I was being shot skyward with explosive speed, only to be checked by the straps about my wrists and ankles, which cut cruelly into the flesh; then, while the steel cases all about me creaked and groaned and clattered as though in agony, realization flashed over me in a triumphant burst and I could have shouted in my exultation. Once more I had set sail for Venus!

* * * *

It was a rather sick and dizzy stowaway that was discovered an hour or two later by one of the cook's assistants, who had been sent into the hold for provisions. But, after being removed to the purer air of the upper decks and treated to food and drink, I found the fumes clearing from my head, and felt an audacious confidence taking possession of me. One thing I was now certain of; it was impossible for the vessel to reverse its course or return me to earth! therefore, no matter how the Captain might storm and rave, I was certain to reach Venus!

And storm and rave the Captain assuredly did when I was brought before him. I can still see him shaking his hairy red fist at me with many an oath and reproach, to the effect that "Rascals like you are the ruin of spatial navigation!". After an interminable lecture, he assigned me to the task of scrubbing the decks and oiling the engines for the remainder of our flight; while as I stood smilingly receiving this sentence, not at all intimidated by the prospect of a few weeks of drudgery with immortal life in store, he ended with a roaring threat:

"But wait till you reach Venus, my friend! Just wait till you reach Venus! Do you know what they do with stowaways on that planet? The last one to be caught was condemned to ten years' hard labor!"

But even this threat was not sufficient to wipe the smile of triumph from my face. What though I should have to endure ten years of hard labor? Was this not a small price to pay for everlasting youth?

During the remainder of the voyage I was so cheerful, even when mopping the decks or bending over my oil-can, that I became known as "The singing stowaway." And my optimistic mood had not left me even after our arrival, although now I was put in handcuffs and told that I was forthwith to be brought before "The Governor." My enthusiasm did receive a slight jolt, it is true, when I learned that the Governor was none other than my old shipmate Pendexter—but I rapidly recovered even from this shock, for what could Pendexter do to harm me now that I was on Venus?

It was not more than an hour after our arrival when I was led away from the space-port toward the Governor's mansion. Walking manacled between two pistol-wielding guards of the Venusian Navigation Company, I did have a feeling that my return to the planet might have occurred under more dignified circumstances; but on the other hand, I was already enjoying something of that invigoration I had aways experienced on Venus; while the sights I observed during our tramp of several miles were such as to take my mind wholly away from personal affairs.

During the several years since my previous visit, what a transformation had occurred! "VENUSIAN IMPROVEMENT CORPORATION: EASIEST TERMS TO HOME SEEKERS" ran a sign that confronted me along a strip of newly built highway across the space-port; but whether there had been any actual improvement seemed to me a matter of one's point of view. Where a tall forest had reached, blooming with brilliant flowers, luxuriant with palms and tree-ferns, there was only a waste of broken stumps and of distorted, skeleton-like severed branches, above which loomed a huge advertisement in glaring red letters: "Home Sites at Lowest Rates!" In very few places did I observe that any actual homes had been built, though the strip of forest devastated by the Improvement Corporation was enormous, and finely-paved roads reached out for miles where no foot or vehicle was seen to go!

"Why is this?" I was wondering, when one of the

guards, being of a talkative nature, answered my unspoken question.

"You see that ghastly tract of land over there, where the forest has been cut down?" he asked. "That has all been sold as home lots to people on earth by agents of the Improvement Corporation, which is a branch of the Venusian Navigation Company. It is said that some people have paid as much as $30,000 or $40,000 for choice lots on Venus. But when they get here they never use them."

"Why not?" I inquired.

"Because there are not enough workers to go around. It is next to impossible to get men to labor willingly at building anything. 'Why work?' they ask. 'The woods give us all the food we need, and no matter what we do we will live forever. So let us take things easy and enjoy ourselves.'"

● "But if no one works," I persisted, "who is it that has cut down the trees and built the roads and houses? And who—"

"Oh, you will soon find out that some people work," interrupted the guard, casting me a twinkling glance that I did not exactly like. "But not because they want to. Thieves, lawbreakers, and stowaways are made to do all the drudgery. I will even tell you a secret." Here he leaned close and whispered into my ear, while fondling his revolver playfully. "There is such an acute shortage of labor that the Navigation Company has had to take matters into its own hands. So its agents on earth have been sent out into the jungle of Africa and of South America to capture the natives—I won't say against their will, but without asking them whether they want to go. Only the other day, several labor transports arrived from the earth with a thousand black men."

"But by the love of Venus!" I exclaimed. "Do you mean to say they've revived the slave trade?"

"Call it that, if you like," returned the guard, with a shrug. "But the officials of the Company give it a simpler name. They speak of it as business enterprise."

Even as my informer was speaking, I had a chance to judge for myself of the truth of his words. A little back from the road, I observed about twenty colored men who, stripped to the waist, were groaning and perspiring as they swung heavy axes against the trunks of the tree-ferns. To their ankles were attached thick chains joined to great steel balls, while on their brows and arms were hideous scars newly seared by the branding iron—scars made roughly in the shape of an S, the symbol of servitude. And at a distance of about fifty yards from these toilers, in the shade of a russet-hued tree with umbrella-shaped leaves, two white men lounged with rifles in their hands, while smoking and chatting and occasionally quaffing long draughts from a bottle filled with some inky fluid.

It may be that I wrinkled up my lips with repugnance at this sight, for the guard saw fit to chide me:

"Say, friend, you'll soon find those superior airs don't go on Venus. We're all equal here, only we've got to make some one do the work, haven't we? So the unfit must serve the fit. Otherwise, how would civilization be possible?"

The sort of civilization made possible by this system was soon to become further evident. First I was astonished to observe that, of the men and women whom we passed from time to time along the roadside, not one seemed able to walk steadily, while some were reeling and sputtering in the last stages of intoxication. But my amazement grew by leaps and bounds when I saw one or two crudely constructed hovels along our path, heard the sounds of riotous music and of drunken laughter from within, and noticed that the occupants were all whirling about and staggering like men in delirium.

Not far from these amusement houses was an open-air dancing pavillion where men and women, clad as if for a swimming contest, were circling about and falling over one another, with the silly giggling mirth of the inebriated; while from every clump and cluster of bushes within eye-range I could see pairs of arms twining about each other . . . and sometimes not even a clump of bushes screened the arms from my view.

"What is the meaning of all this?" I gasped to the guard. "Has the whole planet gone mad?"

"No—the whole planet has gone drunk," he drawled, laconically.

"Is it then some special celebration?" I demanded. "Some festal day? Some occasion when every one feels the right to throw off all restraint?"

"Not at all—just an everyday affair," was the indifferent reply. "Didn't I tell you that people here take things easy and enjoy themselves? Why shouldn't they? They're going to live forever no matter what they do!"

For the first time, a doubt flashed across my mind as to whether immortal life was after all an undiluted advantage.

But I swiftly cast aside this misgiving, even though the thought did recur that, with all eternity before one, it might seem a little monotonous to remain sober too much of the time.

Nevertheless, my own ardor for Venus was but little dimmed; and a few minutes later, when we came to the end of our walk, I was feeling as self-congratulatory as ever at having returned to "the planet of perpetual youth."

We now found ourselves entering a fairly large building, constructed of palm logs with the bark still clinging to them, and roofed becomingly with the sun-reflecting silvery green leaves of some rubber-like plant. Several sentries, red-cheeked and red-nosed and a little unstable on their feet, met us at the door, and informed us obligingly that "The Governor's in—he'll be glad to see you"—and so, before many minutes, I had had the pleasure of seeing my dear friend Pendexter once more.

CHAPTER VI

Chaos!

● We found him reclining on the only easy chair on Venus, which he had transported from the earth especially for his convenience. A thick cigar dangled from one hand, while with the other he dawdled with a glass filled with some sparkling red liquid. His wedge-shaped face had grown somewhat more fleshy since I had last seen him; and there was an unhealthy flush to his cheeks; but otherwise he was precisely the same Pendexter as always, and I recoiled from him with that same instinctive aversion I never failed to feel in his presence.

As we entered, he was expressing himself in a sharp snapping voice to a Negro lackey who nodded deferentially across the room from him:

"What's the matter with recent importations from the earth? Can't they send us any wine fit for a white man? And as for this Venusian home-brew—it's worse than poison!"

"Yes, sir, yes, sir," the servant was replying mechanically, while a frightened look flitted across his face.

It was at this point that Pendexter chanced to set eyes upon us. He gave a start; then sat up straight in his seat, and regarded me with a hard stare, with a surprised expression as of one who has suddenly confronted a burglar.

"Well! My old chum Forsythe!" he at length ejaculated. "And how in the name of Venus did you ever get here?"

"Just thought I'd drop around and visit my old friends," I returned simply, while he glared at me in a way implying that he could have done without the visit.

"Beg pardon, sir," stated one of the guards, bowing to the Governor with every sign of respect. "He was a stowaway on *The Evening Star*. Caught red-handed in the act."

Pendexter shot an accusing glance at me. "Do you deny this?" he demanded.

"Why deny the obvious?" I flung back. "I couldn't have gotten to Venus by walking."

"But don't you know it's against the law to be a stowaway?" he shrilled at me. "I'm surprised at you, Forsythe! It will be my sad duty, as your judge, to inflict the full penalty!"

"Oh, I'm willing to face the full penalty," I declared, with a confident smile. "What will it be? Ten years at hard labor?"

A moment passed in silence, while he sat staring at me as if to probe me to the depths; then, in slow tones, he challenged:

"Oh, so that's your game! So that's your game! You speak as if now that you're here, nothing else can matter much!"

And suddenly, with a sinking heart, I realized that my eagerness had betrayed me!

With the air of an inquisitor addressing a writhing victim, Pendexter resumed:

"So you think, Forsythe, it's as simple as all that! After sneaking your way into this world, you're ready to risk a little hard work, are you, for the privilege of living forever? Well, my friend, I'm Governor here, and intend to remain Governor, and you're not the sort of man I'm anxious to have hanging around my back door. Do you understand me?"

And then, turning to the guards, he continued, contemptuously, "Take this prisoner back to the space-port! There's a ship leaving for earth this evening. See that he goes with it as laborer. And tell the Captain to turn him over to the police the instant he reaches the earth."

With a low derisive laugh, Pendexter returned to the red liquid at his side, and began sipping it with an air of evident enjoyment; while I, led out between the two guards, felt myself sinking and tottering as though the whole weight of a world lay upon my head!

Back, back, back through the interminable emptiness between Venus and the earth! Back, back, back for weary week after week, while I scrubbed decks and polished railings and cursed fate that I had made this long, monotonous pilgrimage only to be sent back from Venus after a few hours! Never had the triumph of Pendexter appeared so complete before, never had my own dejection been so absolute. For now it seemed as if the last door had been slammed in my face, and as if Venus henceforth was to be as inaccessible as the great nebula in Orion.

Little could I have anticipated those extraordinary adventures which awaited me upon my return, and those slow, sardonic manipulations of fate which were to turn apparent defeat into actual good fortune!

Upon reaching my own planet, after the forty-nine days of the return trip, I was to notice some startling changes. Even as our vessel slid down out of the clouds toward the space-port, I became aware that not all was as it should be. Glancing down through one of the heavy slitted windows in the floor of our ship, I observed a multitude of men on the plains just beneath. Those to the right were all drawn up in serried military formation, and were advancing amid a flashing of guns and shells upon the swarms to the left, who were in precipitate flight and were partially hidden from view by the bluish and yellow-green clouds of poison gas.

"What is this? A civil war?" I asked myself, with a gasp; but I could do little more than put that question, for we were descending so rapidly that after a moment the embattled myriads were blurred from my sight.

● A few minutes later, after we were safely back on earth, the door of our ship was flung open not by the welcoming officials of the company, but by a grim, unsmiling captain of the National Police, who rushed in followed by a score of bayonet-wielding followers.

And while the commander of our craft and the mate and all the deckhands stood staring at him in consternation, the Police Captain waved a long, red-lettered document, and proclaimed:

"By order of our Dictator, I declare you all drafted in the cause of the national emergency! This way, all of you! We will provide you with arms and train you! You are henceforth subject to our orders!"

We still stood gaping at him in amazement.

"But what does all this mean?" I demanded. "What order of the Dictator? What national emergency do you refer to?"

"You will see!" he snapped as, surrounded by sabres, we filed solemnly out into the open air.

And, indeed, we were not long in seeing. Even amid the subjection of a military training camp, where we were virtual slaves and where every breath and current of information was liable to censorship, the essential facts one by one filtered to our knowledge. We learned that widespread insurrections had occurred, not only in Pan-America but in most other countries; that the breakdown of the economic system, caused by the revolt of millions of men frantic to reach Venus, had been reducing whole populations to starvation.

Hungry multitudes, in many states and provinces, had risen against their rulers and battered down the edifice of government, so producing a condition of anarchy, in which vast predatory bands roamed the country, looting, burning and killing, while each man was a law unto himself and the life or property of no person was safe. Moreover, the confusion was only enhanced by the appearance of a new form of exploitation, the frenzy to reach

Venus had risen to such a pitch that, in defiance of the monopoly rights which the Venusian Navigation Company had enjoyed, enterprising individuals throughout the earth reaped huge profits from "bootleg" transportation lines, which sent up hastily constructed, flimsy and poorly-manned interplanetary vessels, many of which disappeared in space without ever being heard of again, while some were wrecked even before leaving our own world.

Yet in the beginning, it was claimed, much of the world-wide violence and strife might have been averted had Pendexter's Company relinquished its exclusive rights and permitted competitors to enter the field. But when the Company, maintaining that it must guarantee its stockholders a "fair" return on their investment, refused to make any concessions, and was supported in this position by the legislators and courts, popular impatience and fury was unwilling to stop short at any barrier, even at the overthrow of all law and order . . .

And so civil war had broken out, with the Venus-crazed masses on one side, while on the other were those powerful financial interests which revolved about Pendexter and which controlled what remained of the State. The situation was complicated by the fact that the political leaders, with that lack of courage characteristic of the so-called representatives of the people, could not be relied upon not to desert in the thick of the contest; and after the Dictator of Pan-America and the Prime Minister of Euro-Brittanica had absented themselves without warning on a specially commissioned liner bound for Venus, and the high officials of other nations had followed their example, how were their remaining adherents to continue unassisted the struggle against chaos?

All too clearly it seemed, in those days of the Great Disintegration, that civilization was doomed and that the world would sink back into the barbarism of the Dark Ages. Such was the boon that the possibility of immortal life on Venus appeared about to confer upon the dwellers on our planet!

As time went by, I began to observe for myself the effects of the Venusian mania. And how bitter were my self-reproaches that I had unwittingly set the forces of destruction into action! Having completed my preliminary training, I was marched about the country in company with thousands of other conscripts, being compelled to engage in many a skirmish with the lawless plundering bands. And the sights I saw were like nightmares—the nightmares of a wrecked world.

I tramped through once-fruitful regions that had been torn and blasted till scarcely a green thing remained; through orchards uprooted, and fields of grain laid waste, and towns and villages blackened, and cities whose only tenants were the stray famished dogs that prowled and fought like wolves. Here would be a great factory standing like a ruin, with broken windows and smokeless battered chimneys; yonder would be an airport, once the scene of vehement activity, but now still and silent as the thoroughfares of Babylon; a little beyond, one would cross the twisted tracks of a railroad, and observe the freight cars ransacked and derailed.

But all these sights, melancholy as they were, had a less desolating effect upon my mind than the swarms of refugees that now and then crossed our road, begging pitifully for the food and raiment we could not give them.

How willingly would I erase from mind the memory of those pinched and haggard faces, those cheeks blue from privation, and drawn as the cheeks of a corpse! Those emaciated forms from which the bones protruded, and which seemed barely able to drag themselves along the dusty roads! Men, women and children!—and the children the most heartrending of all with their joyless features, their mutely pleading eyes out of which all the suffering of an afflicted planet seemed to look!

Living in the woods like beasts, seeking their shelter in caves or in trees or improvized hovels, clad only in wasted rags and sometimes scarcely clad at all, they roamed from place to place in fear-driven hordes, while starvation, hardship and disease daily took toll from among them.

And yet, not many months before, most of them had been sober, respected citizens, dwelling in orderly communities amid the apparent security of civilized life! To such a level had they been reduced by the spread of an insidious germ, of a sinister idea!

One would naturally have thought that, seeing to what depths the world had been driven by the madness of the Venus-seeking, the survivors would have turned their minds away from that treacherous planet. Yet, by some perversity of human nature, the very inaccessibility of the goal seemed to make it more desirable; the very agonies which men endured on its account made them crave for it the more passionately. Even amid the swarms of homeless wretches, one often heard the word Venus, repeated wistfully with an echo of the old cry, "If only we could get there! If only we could! If only—" And many a poor sufferer, by a tragic irony, died with fevered eyes upturned hopefully at the thought of immortal life on Venus.

Among my own companions of the march, practically the sole topic of conversation was Venus. Though most of them were penniless wretches without a prospect in the world, all seemed confident that they would some day reach our neighboring planet; and meanwhile, since the date of that glorious consummation was still indefinite, they consoled themselves by pictures of what awaited them upon their arrival.

There was, for example, a red-faced, bewhiskered little fellow named Sanders, who was always asserting (on the basis of information not without an element of truth) that the reason he wished to reach Venus was that no one there had anything to do but eat, drink and carouse from morning till night. Then there was a dreamy chap by the name of McFarlane, who thought of Venus as a sort of magnified Garden of Eden; while some of his fellows held that on Venus one could never grow tired, and never grow hungry, and never feel pain or disease, but would always feel fit as a Hercules. Then again there was the belief (by no means uncommon) that Venus was a Utopia where there could be no injustice, no inequality, no strife but where at last man could live with his brother in perfect kindliness and benevolence.

A little saddened that men should pine away beneath such illusions, I undertook to describe actual conditions and my companions listened open-mouthed; and then, with the assurance of the totally ignorant, proceeded to disagree with me, clinging to their own unfounded views.

Nevertheless, I was elevated in their esteem by my claim to have been to Venus—so much so that they would seek me out over and over again to hear the stories which they still refused to credit. It was thanks to my Venusian reputation, I am sure, that I was promoted to the coveted post of Commissioner of Supplies—which meant that I was to have charge of the provisions, and was not required to participate in the engagements that were to cost the lives of so many of my comrades.

But I was not to hold this new position for many months. After a period of fruitless skirmishing and guerilla warfare, the chains of our army organization began to relax, and the army began to fade away. So long as there was sufficient food (our supplies thus far had come from the ravage of what remained of the country), the men could be held together; but when the impoverished land could no longer feed us, the conscripts deserted by whole troops and squadrons. Sometimes it was not so much the dread of starvation that took them from us as the wild hope of finding a vessel to transport them to Venus; but at all events the fact remains that the last bulwark of order against anarchy was rapidly dissolving, and that no power on earth seemed able to check that descent into chaos.

There came an evening, when, seated in the tent of the Commissioner of Supplies, surrounded by several cadaverous-looking wretches who had not had a square meal in weeks, I was startled to hear the sharp summons of our Commander-in-Chief, who stood outside my door, hunched up in a most unmilitary attitude. I could almost have sworn that, despite the usual martial inflexibility of the man, he had been weeping; and, certainly, there was cause for tears in what I saw as I darted out of the tent!

Where thousands of men had been encamped that morning, the plains rolled around us vacant and bare. Here and there a horse was browsing; while half a dozen sentries stood motionless above a ridge of grass. But that was all. The army was gone!

"It is the end," muttered our Commander, bowing his head despondently. "Henceforth the wolves will rule."

"Henceforth the wolves!" I bleakly echoed, as he returned my mechanical salute.

And facing toward the west, where a beautiful starlike luminary stood out above the darkening horizon, I clenched my fists and cursed as though thus to challenge the gods that had spread a pall of gloom across our planet.

CHAPTER VII

The Turning of the Tide

● There is undoubtedly much truth in the old proverb that it is darkest before the dawn, for only after the most optimistic observers had given up hope was there any sign of reviving light in the world.

Now that the Venusian frenzy is all over and men are once more able to face the facts with undistorted vision, it seems singular that the desirability of reaching Venus had been accepted by the masses with such unbounded faith. After all, why did few pause to inquire whether life on Venus was all that had been claimed for it Whether the rejuvenation that men underwent there really was proof that they would live forever? No doubt it was only a contagious hysteria that had precluded a saner point of view—just as hysteria may make the rabble incapable of seeing the unrighteousness or stupidity of wars, persecutions, or crusades. And it was to require the argument of visible facts to persuade the world of its stupendous, its incredible folly . . .

The first seeds of doubt were spread by a case that came within my personal knowledge. Making my way back home as best I could after the disorganization of the army, I reached my native town only to find it half depopulated, with the surviving inhabitants eking out a precarious existence on stolen and plundered supplies. Naturally, I inquired for my old friends, and among them Dunmore, a companion on my first interplanetary flight, who had passed two years on Venus and recently returned. What was my surprise and grief to learn that he was dead! No, not slain by accident, or killed in warfare, or overcome by starvation, like so many millions of late! But the victim of some mysterious disease that had come with startling suddenness, wasting away his tissues for no known cause and taking him off while the bewildered doctors vainly conferred! Evidently, then, the rejuvenation he had undergone on Venus had not sufficed to prolong his life!

But the death of Dunmore, unexpected as it was, might not have had any special significance had it not been linked to other reports more astonishing still. Rumors were circulating that Langley, one of the original explorers, had returned from Venus for a brief visit, only to fall dead in the arms of his friends. And the symptoms of his malady, curiously enough, were as vague and mysterious as in the case of Dunmore! Except that his flesh had withered as though from a blight, there was little that any one knew about the disease!

While I was still wondering at Langley's fate, dreading to draw the logical conclusion, fresh tidings came flocking to my ears as if to dissipate the last wisp of doubt. First it was bruited abroad that radio messages had been received from Venus, reporting the death of Langley's colleague, Audubon, who had perished in the same startling manner; then Wilbertson, another of the pioneer explorers, was said to have succumbed, after passing three or four years on Venus; then Cunningsby, also one of the original Venusian group, was declared to have joined the melancholy company which now claimed all but two of the six, rescued by the Morse-Crandall Expedition.

And as if the fates had woven an inescapable net about that whole heroic band, the two survivors were shortly afterwards listed among the dead.

Had it not been for the world disorganization, which prevented the rapid spread of information and mingled whole crops of false rumors with every shred of truth, men would not have been slow about recognizing the self-evident . . . and the anti-Venusian Revolution would have occurred immediately. As it was, however, many months went by before our planet had awakened to realization. And meanwhile the reports from Venus though doubtless exaggerated, were not encouraging.

It was said that scores of persons—mostly old settlers on "the planet of perpetual youth"—had fallen a prey to the same nameless, irresistible malady that had smitten Langley and his comrades. And after a while it became known that a space ship, returning from Venus with a badly frightened party of celestial immigrants, had reached the earth only to report the death of three passengers.

(*Concluded on page* 471)

(*Illustration by Paul*)

Apprehensively the small-men moved back. The disc flamed in a sudden orange burst. Instantly the whole beam came crashing down.

OUTCASTS FROM MARS

By ARTHUR G. STANGLAND

● Necessity is a great rebel against ethics. Germany perhaps meant to maintain Belgium's neutrality; but in face of extinction by her enemies she was forced to her action. Japan might want to respect China's independence, but in face of her crowded population she feels that she has no other course than that which she now pursues.

Such grim necessity might possibly operate among inhabitants of a planet like Mars, where conditions of existence would be precarious. Pitiless struggles might take place between factions of the population, and the losers exiled. Suppose that occurred and the exiles were doomed to extinction on earth. Would they submit tamely or would they assert their right to live?

Mr. Stangland answers this question in his exciting intrigue of two worlds.

● ANTARCTICA! Vast, rugged, untamed. An eternal wilderness of white, steeped in the long, brooding night of an ageless hinterland. A shunned continent of lonely, jagged crags and illimitable plateaus, swept by screaming blizzards, and wracked by frightful cold.

It is a majestic region of savage element and sparkling merciless ice that has drawn many dauntless men to its weird yet gorgeous realm, and kept some for the price of its primeval, terrible beauty. From lonely peaks wild winds unfurl banners of hard, powdery snow; and down their bristling, iron-clad slopes solid rivers of ice grind slowly but inexorably.

Odd, grotesque shapes bulge up in the gloom from its white seas along rugged granite coasts, and always on the still night air floats the strange music of ceaselessly shifting ice floes. Overhead in a spangled glory of luminosity flame the Magellan Clouds, and lower in the sky gleams the Great Southern Cross, scintillating like an iridescent regal diadem. And over all hangs a bleak, terrifying desolateness from the Bay of Whales in the ice-bound Ross Sea south across the Pole to the Weddell Sea in the east. Such is the land "down under."

One degree from the Pole and fifty miles closer to it than Mt. Olsen on the southern tip of the Queen Maud Range squatted the thick-walled edifice of the Interplanetary Radiophone station. It was almost in the midst of the vast polar plateau that thrusts itself upward 10,000 feet and called by an ancient Viking explorer, Roald Amundsen, King Haakon VII Plateau, after his king.

The windowless grey walls of the structure were lighted brilliantly by floodlights in contrast to the deep gloom of the surrounding Antarctic night, to guide infrequent planes that made the dangerous polar journey from the Horn to Tasmania. Dominating the massive building atop a solid tripod was a large parabolic cage of fine platinum mesh, in the focus of which glowed a helical coil. All through the Antarctic night the radio "eye" was trained on the red disc of Mars, following it around the heavens against the diurnal motion of Earth.

Arching high over the distant northern horizon of the plateau came a purplish-violet haze to fuse with a dull glowing coil on one of the supporting arms of the tripod—a power-beam that stretched over an empire of ice and snow. It went across the Ross Shelf and out over the Southern Ocean to Invercargill on the southernmost point of the South Island of New Zealand. Electrical power hurled through space on a violet beam.

Inside the great temple of communication and working under temperate climatic conditions were a score of men continually on duty in relays. They connected London, New York, Melbourne, Peiping and other planetary cities with the ten Martian multiplex radiophone circuits as well as the ship-to-planet voice channels for space liners *en route*. A vast network spread out over the planet with its focus at the nether pole.

Excitement was running high in the "Igloo,"—a name taken from a famous explorer's pet dog. A great passenger liner was lost in space. Switchboards were jambed with frantic calls from all over the world. What news of the *Martian Princess?* Had it been found yet? Many lives lost?

And in the midst of it all developed a shortage of power.

Radcliffe, the portly director of the station, stormed by the trunk switchboards in a fury.

"Jones!—Benecke!—and you, Harlan!—tell Capetown, Rio and Launceston we can't take any more personal calls from international cities asking about the *Martian Princess!* It's slowing up your work. Take over personal supervision of all calls coming in from Mt. Wilson and Hamilton and Yerkes—and any other observatories wanting ship-to-planet service. They're cooperating with searching ships. But for Heaven's sake, ignore those other confounded calls cluttering up the panels! We've got a power shortage somewhere and if the searching ships go any farther from Earth—they're getting fainter all the time—we won't be able to reach them!"

He bustled back to his office where a young man waited before a chart spread out over a desk.

"All right, Rosson, go on again—what did you say you think is the trouble?" he prompted, breathing audibly from his hurried sortie.

Rosson, a slender, wiry man, extended a brown hand, pointing his forefinger to the map where a red band drawn straight from a point on the 140th meridian near the Pole to Invercargill crossed a region called the "Devil's Ballroom."

"George and I took a modified Murray-Loop test on the powerbeam," he spoke rapidly, "and that's where the leak apparently is—only one hundred and fifty miles away. Probably near Mt. Helland Hansen where the first of the insulators is located as she starts to jump the Queen Maud Range."

"I see," answered the rotund Radcliffe slowly, leaning over the chart from his chair, and inspecting the culpable region minutely. "Maybe grounding to the magnetic ores along in there some place—a strongly magnetic locality."

"That's what we suspect, Clif," returned the electrical engineer, "so George and I are going to hop over there with a couple of buffers and 'scopes, and locate the trouble. If it's a new insulator we need, we'll give you a call, and you can send the crew."

Radcliffe looked up and gazed into the other's intense brown eyes with a serious wag of his grey head.

"I don't like this business of you two going out alone, Rosson," he protested, "a blizzard might blow up while you're out there. Dangerous, you know! If it weren't so imperative just now, I wouldn't countenance it."

"We'll be all right, Clif," the younger man humored him, "if a blizzard does blow up we'll ride it out in the plane."

"Yes, I know you youngsters—always confident," mused Radcliffe. Then he got up, raising his voice: "Anyway, for God's sake call us if anything should happen!"

● In the base of the massive building a large door slid back and into the glare of the floodlights taxied a gleaming plane, quite large and yet sleek enough to spear the air at 400 miles an hour.

"Everything ready, George?" asked Rosson, turning from his controls to glance at George Danville his good-natured, freckle-faced assistant at the station.

"Ready!" Danville returned quickly, pulling on thick furry gloves and making sure navigation instruments were fast beside him.

Rapidly they rose on whirring blades that clipped the frigid atmosphere smartly. At a 300-foot elevation above the violet beam Rosson turned on the great four-bladed propellers that were soon hurling the ship ahead at its speed limit. Silently, the two men watched the faintly luminous path below them as mile after mile ticked off on the panel log. Overhead danced a weird, folded curtain of light shimmering uncertainly with sudden opalescent dashes of color. Aurora halos. And through the witchery of the polar night hurtled the plane, passing with but a faint hiss through the dead, crystallizing atmosphere. Rosson squinted hard through a side window at a line of mountains some thirty miles distant to the east and outlined in fantastic colors against the blue-black horizon from the pulsing electrical "rainbow" overhead.

"That's Mt. Ronne over there—a little over halfway," he observed. Not long afterwards, he spoke again. "Mt. Hjlmar Johansen and Mt. Beck on our east there. The Range is drawing closer to us. Won't be long before we're entering the 'Devil's Ballroom.'"

"What a sinister name for such a place!" muttered George deep in his furs.

"And what a perfect hell of a region in a blizzard!" returned Rosson, snapping on landing lights, that sparkled on the snow field below as if on an expanse of flashing diamonds. He cut his motors, and gently turned over faintly throbbing helicopters, letting the ship down as lightly as a vagrant snow flake. "Think we'll take a test here, Danville, and see if we can detect any dielectric leakage."

Together they brought out a large heavy instrument much like an electroscope with a fine mesh screen spread fanwise on top and mounted on a light sled. Some distance from the plane and almost under the power-beam they stopped. Taking a long rod connected by wire to the instrument, Rosson drove it down far into the snow.

"Hardly think we'll get anything here with the dielectroscope, but we might as well make sure," he said, setting a lever with his thick, gloved hands and watching the delicately balanced needle of the dial. Nothing happened.

"Didn't think we'd find any leakage here," murmured Danville, rising from a stooped position.

"Well, we're satisfied there's not the slightest drop here," concluded Rosson, getting up and leaving their trail light on the snow. "Disconnect the ground rod while I get the Murray-Loop. We'll work from here on."

When Rosson came back from the plane he was pulling a duralumin sled upon which rested a compact mechanism. From the center of it rose a shiny rod ten feet high and topped by a gleaming ball electrode.

"Crank her while I adjust the grounding wire and take readings."

"You know, Ross, I never did like this damned machine," muttered Danville, looking askance at the instrument, "you're sure the blessed thing is safe?"

"Sure, go ahead. With a perfectly conductor like that above us you don't have to be scared."

"Well, as long as it doesn't use my head for a ground—" Danville left the sentence unfinished.

"George," said Rosson aside, as the recording dials swung free with Danville's efforts at the generator, "I sometimes think your head would make an excellent conductor!"

Before Danville could return an acrid retort, Rosson flipped a switch. Immediately, from thousands of feet overhead a tiny invisible stream of energy spouted from the big surging beam, and flashed groundward momentarily to dance in a crackling display on the surface of the bright electrode. Rosson worked furiously, jotting down figures from several dials, while Danville turned the high-geared generator swiftly. Weird blue light sputtered above the engineers. Like strange gods from Olympus they looked, tampering with Thor's hammer.

"Good work!" announced Rosson, cutting the generator. "All through."

● Instantly, the thin stream of electrical power dancing over the electrode vanished in the air, and the great beam above hummed on softly as before.

"Now let's get this stuff back to the plane where we can figure in comfort." Together they towed the cumbersome machinery back to the big plane.

After several minutes of computation they checked ex-

actly upon comparison of data and figures. "So, we're still twenty miles from the leak," observed Rosson, regarding the answer, and putting on his thick gloves again. He started the electric motors and lifted the ship neatly. "Exactly where does that put us on the map, Danville?"

"Just about in the middle of the Devil's Ballroom," returned the other, examining a chart.

"That's not far from Mt. Helland Hansen—just as we figured it out at the Igloo. Checks pretty good, doesn't it?"

But Danville didn't answer. He had flashed on a panel light, and was looking closely at an open face dial. "Say! First time I knew the barometer was dropping! Doesn't look healthy to me, Ross."

Rosson frowned slightly. "Dropping, eh?" He looked in the southwest. In the dim polar light he made out a dark line of clouds rolling over the peaks of the Queen Alexandra Mountains. A blizzard blowing up! They would have to work fast to get their work done before it came. To their right miles away loomed the chill, lonely crests of the Queen Maud Range heavily blanketed with snow, like gloomy hunchbacked men.

Twenty miles, and time to land. Deftly, Rosson brought the plane down in the Devil's Ballroom through which the first of intrepid aerial explorers, Admiral Byrd, had roared on his way to the Pole after fighting his way up the Axel Heiberg Glacier a hundred miles beyond. Again they get out the di-electroscope and set it up in the snow. Queer, bulbous hummocks of drifted snow loomed up around them. Unreal, eerie shapes that took on an unearthly illusion of the fantastic in the uncertain half-twilight. Already a bitter cutting wind was blowing from out of the south-west, forming zastrugi in the snow, and sweeping the crystalline dust before it like sparkling rhinestones in the men's flood-lamps.

"That's funny—doesn't kick over at all!" muttered Rosson deep in his hood. He looked high over his head. The power-beam still glowed there dully on its straight course. He gazed, perplexed, at the delicate needle again. "This is the exact spot we calculated."

"Perhaps the leak has stopped," offered Danville in explanation.

"We'll soon find out!" exclaimed Rosson hurrying for the plane. He came back dragging the detector. Quickly, they had the generator spinning rapidly enough to draw a sputtering stream of energy from out of the sky.

In a moment they had gathered their necessary data, and started to mush back to the plane. Inside, Rosson figured intensely for a moment. He looked up in sudden surprise. "We're on the exact spot. Danville, what do you make of it? The 'scope is all right—I tested it in the ship."

"Rather a strange thing when one instrument says there's a leak, and the other says no. One of 'em must be lying," returned the freckle-faced assistant. He looked out from a southwest window of the cabin. "This is getting worse, Rosson. If it wasn't for devils out in space on that liner, I'd say let's go home! Looks like a bad blow coming our way. But we've got to find that leak."

"That's a certainty. And here's what we'll do: I'll leave the ship headed in the wind with a searchlight on our back path, and then we'll start testing from here right on up to the Mt. Helland Hansen insulator. We can take turns at towing the 'scope and reading." Rosson, quick to put any plan into action once decided upon, turned the plane nose to in the rising gale.

ARTHUR G. STANGLAND

CHAPTER II

Men of Mars

● Quickly, they brought out the di-electroscope on its little sled again, and gauging their direction by the beam overhead, mushed on through the icy blast, stopping every hundred feet to shove the ground rod into the snow and take a reading. Around them the rising wind howled like a protentous voice of the Antarctic spirit. Rosson cursed it, recalling with an unpleasant shudder the eerie death howl of a wolf he had once heard. The sky had clouded over and snow began falling like fine diamond dust, cutting at exposed portions of the face.

"I was hoping we were wrong in our calculations, George, and that we'd find something up along here," announced Rosson at last. "I can't understand it at all."

"We'd better get back to the ship and ride out this blizzard, before it's too late," warned Danville. "We can't reach that insulator now. My feet and hands are ready to snap off like icicles."

"Yes, so are mine. These storms blow up suddenly and just as suddenly die away. We'll go back to the ship and call Cliff for a check on the power-beam again. Maybe we're off a little." They turned around, and headed into the icy blast, wiping their glasses frequently so that they could follow the searchlight on their plane now becoming dim in the tremendous downfall of snow. By now the gale had increased to an alarming intensity. The snow-laden wind, coming down off the polar plateau like a racing river of crystals, bore down upon them mercilessly, to go howling through the bottle-necked Devil's Ballroom and on to the Axel Heiberg Glacier like rampant legions of bedlamites.

"We let it go a little too long I'm afraid!" Rosson yelled in Danville's ear, as they struggled desperately against the bitter gale.

"It's beginning to look that way!" the other returned in a concerned voice, nodding his hooded head.

It was just as they were nearing the plane that it happened. Tremendous gusts of wind began coming full in their faces, and when they dropped the tow line on their sled to mush frantically on to the plane, a particularly vicious blast lifted the ship up at a grotesque angle on her tail runner. The powerful searchlight swung around, stabbing the night sky in a single flash like an air beacon. One instant it was there. And then the plane flopped on

her back in a welter of white dust, the light blinking out suddenly. Both men ran to the stricken monster of the polar skies, cursing roundly. Rosson poked a light inside, looking over the interior. He came out in profane disgust.

"A fine fix we're in now! The power batteries were jerked loose in the fall and the damned acid is eating up everything inside—including our food rations."

"And we can't even call Radcliffe now!" added Danville glumly.

In the lee of the plane Rosson played his light out in the snow crystals skimming by in white streaks. "And with nothing to eat we won't last long in this storm. I'm plenty cold and hungry now."

"About all we can do is wait here till the storm is over," suggested Danville.

"What a couple of fools we were to go so far away," lamented Rosson, swinging his arms to warm himself. After several moments of listening to the furious night, he spoke. "I don't think we'd better trust ourselves here—might go to sleep, George. Let's head for those mountains we saw when we landed. We might possibly find some shelter from this damnable wind in a little protected ravine."

"It must be nearly 50 below, Ross!" protested Danville, "think we can make it in this wind?"

"Say, inside of a half hour we'll be 'stiffs,' if we stay around here—too much temptation to sit down! Let's get moving!"

And though the assistant grumbled at the idea some more, the two men set out by compass for the mountains in the east. The wind coming from their right tore at them hungrily with icy fingers. And just as grimly fighting off the needle sharp blast, they mushed on over the uneven zastrugi in the snow, occasionally throwing their searchlight beam before them. Rossin had confidence that they could reach the protection of the mountains, but it was not until Danville began to have a fit of coughing that he sensed a sinister presence. The howling of the wind might have been the echo of a wolf.

"What's the matter!" yelled Rosson above the storm. Could it be that he was—? "Hold up your head here, and let me look at you!"

He flashed the light in the assistant's face, pulling his furred half mask down. Blood was on his lips. "Frozen lungs!"

For a moment Rosson was stunned. How long could the man last in this frigid blast with bitten lungs? There was nothing to do but carry on—get out of this freezing hell, rightly named the Devil's Ballroom!

"Think—think I can make it?" gasped Danville between spasms.

"You bet you will!" exclaimed Rosson determinedly, as if to match the derisive whine of the polar night. And he put an arm under the assistant's shoulder to help him along. Together they started on again, blundering over the hummocks, sometimes stumbling to their knees, only to rise grimly and fight on.

Suddenly, in the gloom ahead of him Rosson made out a dancing pinpoint of light, white light that barely shone through the storm. As he became conscious of its jogging gyrations against the velvet darkness at the base of the mountains, an uncanny sensation passed over him. Was he beginning to see "spots"? But they only appear to men going snowblind in the continual glare of the sun on vast fields of ice and snow. This was different. There could be no doubt of it now; the light was growing stronger as it approached them. Perhaps someone from a plane. It meant something warm to drink; maybe, even food! They were saved!

"Someone's coming!" he blurted to the nearly exhausted Danville. He swung their lamp up and down as a signal.

"Yeah?" And in the next moment, the weakened man collapsed sagging to the frozen ground.

● The light was almost upon them now. Rosson waited, kneeling before Danville to protect him from the swift fury of the blizzard, and setting their lamp down beside him to guide the unknown rescuers. But he was not prepared for the surprise that came when the big electric sled approached them down a small slope. It stopped nearby. A small figure hopped out of a steel door in front. Another followed. The bright beam of a flashlight stabbed through the night to pick out the indistinct forms of the men on the snow.

"*Aileida!*" It was a strange deep voice, unlike an Earthman's.

Rosson got up from the snow. "Help him, will you? I'm all right." He indicated the prone figure of his assistant on the ground.

In the glow of his own light as he picked it up, Rosson caught his first glimpse of their rescuers. Good Lord! The low caste Martian "small-men" he had heard about! Immigrants that high caste Martians, the Mogals, had forced the Terrestrial Government to exile on inhospitable Antarctica. Wondering, he helped the little men carry Danville's heavy body into the warm interior of the sled. Inside, they slipped back their hoods, as they started to work over the exhausted man, and he got a better look at them. Nothing grotesque looking about them, contrary to what the Imperial Martian Government had intimated. In fact, he decided, they were very human looking, being only smaller than the ordinary person. The sympathetic concerned look on their smooth oval faces as they helped Danville, won a friendly answering feeling from him.

"What happen?" asked one, called "Aksa" by the other Mars-man.

"Our plane turned over," Rosson explained, "and we had to keep moving, so we just struck out for these mountains beyond us."

Aksa pointed down at the prostrate engineer. "He veree sick Earthman! 'Froz' lungs. We take you our colony now—food, rest, warmth!" And the Mars-man smiled appreciatively, as Rosson's eyes lighted up at the mention of food.

"How far away?" asked Rosson.

"Over big mountain you call 'Helland Hansen.' Better rest now—furs keep warm," the small-man returned, suggesting he lie down to sleep. Aksa turned to the steering controls of the motor sled, and soon they were rolling rapidly along over the white field of sparkling crystals.

But Rosson didn't lie down. The journey ahead was too interesting. Through the thick windshield in front he watched the swirling flakes in the brilliant beams of the headlight, and felt a tremendous satisfaction being inside out of the hellish polar fury. Soon they were entering the foothills surrounding Helland Hansen, round topped fluffy

masses of snow that they skirted, ever ascending. In and around wind-swept black rocks the sled crawled, feeling its way along the tortuous path. Up on the side of the mountain the caterpillar tread clung desperately to narrow icy stretches of the trail.

Rosson, grim of face, stared ahead in a tense silence, listening to the storm. Lonely stark ledges and perilous slopes, falling away into deep gloom below. Savage gusts of crystalline choked wind, and frightful weird noises from the blast charging down upon the rugged peaks. More than ever he was sensing the real menace of the Antarctic—the still untamed. Never before had he been caught out in a polar blizzard such as this.

Ahead of them the trail straightened out suddenly in a lull of the storm, and Rosson could see they were at the summit of their trail—a narrow pass between two towering peaks lost in swirling clouds of snow. On the other side they jolted and bumped along over a rough ledge. Somehow, before he noticed the change, they were riding down a big glacier. Thick jagged chunks of ice loomed up around them, and in between yawned cavernous crevasses. Rosson wondered at the genius of the Mars-men in picking their path through such a dangerous field of pitfalls. Apparently, after awhile, the glacier lost itself in a broad expanse of snow, lying between surrounding mountains. It was then that he got his first glimpse of the colony lights in the white fog-like air ahead.

"Is this your colony?" he asked Aksa at last.

"Yesss," came the sibilant answer, "we call—Lonar."

Rosson looked critically at one of the outlying buildings as they approached the settlement. So, this was a little of transplanted Mars—octagonal structures of metal, with rounded roof, repulsing stubbornly the vicious onslaught of the pitiless Antarctic. The electric sled stopped before a large imposing structure seemingly in the center of the colony. A shrill blast from a klaxon siren on the sled rent the furious night. A moment only, and then the blank space in the wall before them slid back out of sight, revealing a bright interior into which the sled eased silently. Several small-men appeared from nowhere. The door closed behind the sled and when Rosson looked out he saw several more electric sleds parked away to the side. Their garage, probably.

By this time Danville had aroused from his deep sleep at the sound of the shrill blast. He looked up at the engineer as Rosson helped the Martians carry him out of the low entrance to the sled.

"Where are we, Rosson?" he asked in a faint voice, staring nonplussed at the little men holding him.

"We're all right now, George," answered Rosson reassuringly, "these Martians came along just in time to pick us up!"

"Small-men?" But Danville was too weak to inquire further.

"You rest now; stay quiet," Aska admonished him, "veree sick Earthman!"

● The other Martians stared curiously at the terrestrials, and then put the ice-crusted sled in a corner. Danville was taken into a warm comfortable room, and laid on a bed covered with thick fine furs. Wonderingly, Rosson watch Martian women slip in and out of the room quietly in obedience to Aksa's orders, bringing in smoking liquids and silver-white containers of strange smelling foods. Deftly, yet gently, the diminutive Martian administered healing, soothing compounds to the frozen lungs of the half-conscious Danville, compounds that boiled and gave off medicinal gases. The fear in Rosson lessened as he recognized the skilled physician in Aksa. Danville was in good care.

Suddenly it struck him that it was time he reported in to Radcliffe. Probably worrying about them by now. Quietly he questioned the small-man. "Aksa, you have a radiophone here somewhere?"

The Martian nodded. "You go with Rokol, he show you," indicating the second Martian that had been with him.

Rosson followed the small-man out of the room and down a short corridor. It was just as he was passing a closed door leading into the center of the large building that Rosson hesitated in his stride at the sound of a deep humming beyond the door. He stopped to listen. The unmistakable hum of a power-beam transformer! Strange. He hadn't thought to ask where they got their power. But a power-beam? He opened the door to look in. Massed in the center of the room, were the familiar three transformers and on a platform above them the intricate mechanism for separating out the three waves of the beam carrying the electrical power. Radio power! Where did they get it?

"You go there not—dangerous!" commanded Rokol, coming back to him, and scowling slightly.

"Oh, that's not dangerous to me—I handle that stuff all the time down at the transmitter! I'm an engineer." And Rosson started into the room, followed by the protesting Martian.

With a professional eye the engineer examined the shining glass-enclosed transformers, and traced the wiring from the center of the ceiling where the power wires entered down through the bank of big tubes and transformers. At the control panel he glanced casually over the dials. Rokol was watching him intently from a distance, answering his questions curtly.

"First time I knew there was another power-beam entering Antarctica. Where do you get it—South America?"

"Uh—yesss."

Rosson whirled suddenly. "You're lying, Rokol! You know as well as I do that you're stealing this power from my company's beam crossing Mt. Helland Hansen above you! Your kilowatt meter gives you away. We've been tracing a leakage of 50 kilowatts in our powerbeam near here—that's just what you're recording on the panel now! No wonder we couldn't detect it with our dielectroscope—it wasn't going to ground at all!"

The little Martian became greatly agitated, his thin lips compressed into the slender line of a pallid scar.

"Inquisitive fool!" he cried angrily. Stepping to the door, he called someone in his native tongue. Running feet pattered on the outside. More followed. A sizable crowd were soon gathered behind Rokol at the door. Aksa came in more leisurely, pushing his way through the men.

"What wrong?" he questioned his companion.

"This Earthman from transmitter near Pole!"

Rosson gazed back at them belligerently. "I'm demanding that you stop this power plant—stop robbing us of vital energy!"

Aksa was silent for a moment, a quizzical expression on his face. "If we do, we all die. This our only source

of heat. Your government put us here; promise heat and power from black rock you call coal. Coal in mines all gone—government men advised by our Martian enemies, Mogals, to exile us here. Mogals knew coal would disappear. You would kill us all?" There was no anger in his voice. Merely a calm dispassionate mien.

Mogals. Rosson knew them. The ruling caste on Mars. They were all over the Earth. Did they really lie to the terrestrial government and influence it to assign these people to the polar continent because they were ancient enemies on Mars? Plausible, but he thought of the big space liner with frantic passengers on board.

"I can't help it, Aksa, we've got some chance down here on my planet, but out there in space the *Martian Princess* is depending on our station to get messages through to save her from the sun, and you're endangering it."

A murmuring went through the crowd. Aksa came forward.

"Rosson, your friend—Danville, he die with us too," he said quietly, reminding him of the debt they owed for saving their lives.

Suddenly, Rokol spoke sharply to Aksa in Martian. Reluctantly, he turned from Rosson and went back to the others. A loud unintelligible argument ensued, with Rokol apparently against Aksa. Rosson eyed the Martians at a distance. He didn't like the tone of the voices. There was going to be a fight on his hands he felt sure. Rokol was a bit harder than Aksa, and seemed to be leading the others against the latter. Suddenly, he thought of a plan to avert the impending trouble.

"Rokol, will you cut off the transformers until this search in space is over. I'm willing to stay here with you and help you devise some other way to heat the colony temporarily, and then I'll do what I can to get the Director of the transmitter to present your plight to the terrestrial government. But right now we've got to have this power you're using!"

CHAPTER III

The Invasion

● The group of Martians quieted down, looking to Rokol as their spokesman. Aksa started to say something in approval, but was silenced by the others. Rokol's little eyes shone with a new hard gleam as he turned to answer the Earthman.

"No, Rosson," he began in his characteristic deep voice, "this one great chance for revenge on Mogals. Now we force them give us new home on Earth!"

"What are you going to do?" The Earthman was perturbed by this unexpected turn.

"We go immediately South Pole transmitter—take possession, stop communication. Maybe then Mogals tell government give us new place!" Rokol's smile was triumphant.

Rosson stared back in amazement. In this day and age they would use violence to attain their ends! Endangering the lives of innocent Martian people millions of miles out in space away from help. It was unthinkable! And yet he felt a certain pity for these small-men, that self-preservation in such a frightful land should drive them to taking advantage of the present emergency. Yet all of them did not approve such extreme measures. But Rokol led the military faction in the colony and consequently overrode any opposition to measures proposed by his wing.

"You witless little fools!" he burst out, "that barbaric act will bring a thousand planes of the international police down here on your heads!"

"Maybe. But not soon enough—we control delicate situation. We force terrestrial government listen!"

There was no turning him aside from his plans. Rosson stood silent for a moment. If only he could get near a radio to warn Radcliffe! Rokol was already giving orders to his followers, who immediately departed from the room on their secret missions. Perhaps if he bolted through the door into the next room which he had learned was the radiophone station he would have time enough to warn the men.

"And you, Rosson, we hold hostage," announced Rokol, as he turned from his men. Aksa had gone, declaring he would be no part of the scheme.

"Yeah?" returned Rosson negligently, covertly watching the door. Only a few men left now. A foolhardy thing to try. They would get him soon, but if he could only reach—

With a mighty leap he cleared the short distance to the small-men at the door, thrusting them in all directions with his arms. Five of them, and he handled them easily. The suddenness of his attack had taken them unawares. Now for the door. A quick jiggle of the latch—at least it wasn't locked! With a desperate shove he pushed the door in, taking in the room at a glance. Empty. And the radio instruments were close at hand. Hurriedly, he locked the door—the Martian small-men close behind. Nervously he fumbled over the connections of the voice panel.

Then a cold chill chased up his back, as he stood there. The men probably wouldn't answer his call because of Radcliffe's orders! And it would have to go through the switchboard. A heavy pounding started at the door. Hastily, he set the dial combination for the polar station, and pressed the buzzer for the call. The loud crashes against the door reverberated in the room. Tensely, he waited with the phone to his ear. He was beginning to despair of an answering call, expecting the door to break in at any moment. Something broke with a report. A hinge, probably. Against the din of the hullabaloo sounded the voice of Rokol exhorting his men to haste.

"Hello, Interplanetary Station, Burns speaking."

Electrified by the answering voice of the operator, Rosson immediately poured forth his warning.

"Burns—this is Rosson talking! I'm a prisoner of the small-men; they're breaking in on me now. There's going to be a raid on the Igloo—they're the ones taking all the—"

The door gave in under the thunderous blow. Rosson turned in time to see Rokol hurling a tiny sphere of glass. It shattered on the desk before him, expanding in a great puff of white gas. Ill-smelling stuff. God, it burned! Things were turning around and around. The phone clattered to the floor, and he swooned, his last conscious sensation being of the oncoming little feet of the invaders.

● A wild whistling of wind reached Rosson as he opened his eyes. Something familiar about it struck him. Propellers—four-bladed ones, were making the sound. He

sat up, breathing deeply of the air. His lungs felt constricted with pain. Knockout gas, evidently, paralyzing the victim temporarily. A small-man at the forward end of the compartment turned in time to see him rising.

"Earthman awake!" he barked out to someone.

Rosson looked out from a back window of the cabin. They were in the air, heading into the teeth of the blizzard. The air-stream was filled with snow, and the flashing propellers were biting into the charged atmosphere greedily. He must have been out for some little time. Rokol came toward him from the front.

"Sorry, Rosson," commented the Martian, making a deprecating gesture. "You act very quick."

"Yeah, but not quick enough!" the other answered, gazing down at the diminutive small-man speculatively.

Rokol must have read some suddenly forming plans in the engineer's eyes. "Act not quickly now," he admonished, bringing to light a little gun, "very dangerous."

Rosson relaxed, sitting down on his couch. From behind a partition he heard the voices of other small-men. He cast an inquiring look at the Martian. "We're on our way to the station now?"

"Yeass—fifty armed small-men and three planes."

Rosson glanced out of the window toward the ground. A short distance below them was the soft dull radiance of the power-beam glowing dimly in the saturated air. No chance of them getting lost in this blinding blizzard. The tremendous air thrust of the powerful blades seemed more than a match for the tornado of wind. Like a counter blast they were tearing through the upper levels down toward the Pole. The Martians apparently were confident or else fearless.

"And what are you going to do when you get there?" the engineer asked.

"Stop all communication. Then we call Geneva, and make demands. They must accede!"

It was useless now to swerve them aside from their goal, being thus far launched upon their scheme.

"When will we be there?" asked Rosson.

"Very soon. These planes very swifter than yours," Rokol answered, permitting himself a little gentle boasting, even if ungrammatically.

The sharp voices of the Martian pilots up ahead caught Rokol's ear. He turned on Rosson swiftly. "You stay here—make no trouble, else . . . !" and he looked significantly along his weapon. Quickly, he made his way forward.

Rosson turned to the window, and squinted into the darkness. They were beginning now to deviate from the path of the beam, and veer off to the left of it. He saw two more planes immediately behind them, maneuvering in the same manner. And now he saw it, a center of brilliant light on the vast plain below in the south—the transmitter! Above it loomed the huge parabolic projector, the hub of inter-world communication.

Adroitly, the three planes wheeled off at a tangent to come into the wind upon landing. A clumping of many feet sounded close to him, and the door opened in the wall of the corridor. Out they came, small-men, heavily furred and carrying small arms for the quick sortie upon the station. Apprehensively, Rosson gazed out of the window toward the station as they crowded forward, and then smiled, reassured at something in the snow-filled world outside. Radcliffe was prepared!

Rokol was coming back along the corridor, giving orders to the men in Martian: "Assemble outside in front of the planes!" Then he confronted the Earthman.

"And you go with me," he commanded much like a child with a toy gun. It suddenly struck Rosson as highly comical being ordered around by a dwarf, and perhaps something else prompted him to laughter also, something invisible yet as impenetrable as the solid core of a planet. Already the men were muttering when Rosson stepped from the ship, followed by the diminutive Rokol.

He took a quick glance at the imposing edifice. A peculiar, mystifying phenomenon was happening right in front of their eyes. No snow was falling or drifting around the building, and yet it was whirling away at a tangent in white sheets, as if from the surface of a revolving hemisphere, covering the entire station. And yet for a distance of a hundred feet around it all was as calm as if on a still night. No wind stirred the dry crystalline surface and no snow sifted down. A crystal dome encasing the entire station including the big radio eye high over head would have had the same effect. After a puzzled examination at close quarters, and finding he could not approach any farther, Rokol came back to Rosson.

"What that?" he asked naively.

"Something you'll never get through. It's a dyonic screen, electrically-dynamic. Keeps out Antarctic storms."

"You say much but think little," the small-man returned curtly. "Sometimes spoken word open locked door." A cryptic smile crossed his cherubic face, and he turned to several of his men motioning them to follow him. They took Rosson with them to the big plane.

The engineer watched Rokol at the radio panel, adjusting the transmitter for voice channel and vision. A vague misgiving disturbed Rosson, as he wondered at the confident, self-assured smile on the Martian's face. What did he mean? A familiar face appeared on the visual screen.

"Earthman," spoke Rokol blandly, "I want Director Radcliffe."

Rosson immediately recognized the white, excited face of Johnson who disappeared from view without a word. A moment later Radcliffe's fat, round countenance came on the mirror.

"Who are you, and what's the meaning of taking my chief engineer and his assistant prisoners?" growled the big Director.

"You talk with Rokol from Lonar. Unfortunate we do this, but demand you withdraw dyonic screen."

"No, I won't, and I'm warning you right now that a detachment of international police planes are on the way from Melbourne. Why, such an outrage as this has never been heard of before!"

"Small-men have no quarrel with Earthmen," explained Rokol, "only with Mogals. Sorry must involve Station, but method of gaining small-men rights inevitable."

● At an order from the leader, several small-men brought out a stubby looking weapon of short tubes fastened around the outside of a thick cylinder. Rosson noticed a smaller flat cylinder at the breech of the machine. At a signal one of the men twirled the little drum, and it started backward again with a clicking sound. Swiftly, one after another the little tubes spouted a stream of fire, a torrential display of brilliant protonic spheres. Harmlessly, the vorticies of blazing light struck the whirling dyonic screen, and shot out at a tangent in bright streaks

like sparks from a grind stone. The men outside in the snow looked back into the plane helplessly at Rokol.

"You see, it's impossible to blast your way in here!" exclaimed Radcliffe from the screen.

Rokol turned a triumphant smile on the Director. "Yesss, I witness first failure. But locked door will open now." And the little Martian drew Rosson to the mirror. "Your hostage!"

"Rosson!" blurted Radcliffe, starting in surprise, "what's behind all this?"

Rokol stood to one side, looking up at Rosson from his little height, and apparently enjoying the Earthmen's conversation immensely.

"For the sake of all those innocent lives on the *Martian Princess*, Clif, don't let these small-men inside, no matter what develops!" Rosson burst out, grabbing the sides of the circular screen. "They want to hold up communication, and then deal with Geneva about a new region to live in. It's a terrible situation to take advantage of, but that's what they're doing!"

Rokol stepped up to the screen again. "Deadly cold out here, Director Radcliffe," he began, "and bare human flesh shrivel. You open or Rosson go naked in blizzard!"

"But—" Radcliffe stammered aghast, and then stopped. The Martian had played his hand carefully. The Director's face paled as the real import of the ultimatum struck home. Hundreds of lives in space depending on his efficiency, and down here Rosson's very life in his hands. In either direction he stepped, death was almost certain to dog his footsteps.

"Don't give in, Clif, no matter what happens to me!" Rosson cried out sharply, even though his own face blanched. "Think of all those women, and children too, out there depending on you. One life is nothing compared to all of them!"

"Good God, Rosson, why should I be made to sacrifice even one valuable human life to save those hundreds in space?" implored Radcliffe in a shaking voice. "Isn't there some other way out of this?"

"Damn it, man, you *won't* weaken!" And Rosson smashed his fist into the mirror, shattering it completely, before the others around him could stop the act.

Several of the Martians seized his arms roughly, and started to drag him outside. "Yes, better hurry or be caught red-handed by the detachment when they arrive!" he exclaimed ironically, sneering at the angered Rokol.

The expression on the little Martian's face suddenly changed. He came forward at a hurried waddle. "Wait!" he cried out. The men stopped in surprise, looking at the commander for an explanation. He poured forth a torrent of Martian words none of which Rosson understood. One of the men, apparently a lieutenant of Rokol's, set out in the blizzard to the waiting small-men. Wonderingly, Rosson saw them going back to their planes and the contingent from his plane mushing through the snow toward the door. "We have other use for you!" Rokol answered the questioning look in his eyes.

As soon as the men had entered the ship the door was shut tight, and Rosson, taken back to his own section, saw no more of what was happening. But his acute ear heard the labored attempt of starting motors out on the wings, twisting loose from oil-congealed bearings, the quick, crisp orders of Rokol spoken into the squadron phone. What did the little Martian have in mind?

Rosson had a feeling that Rokol was not balked yet. That calculating glint that came into his eyes when Rosson mentioned the coming police held something that was ominous. The captive engineer felt the plane rise strongly into the raging blast of the night, tilt slightly as the horizontal screws took up the easy task of biting into a tail wind, and then accelerate rapidly to a terrific speed. No one came near him during the short duration of the flight. A strange, portentous silence was kept throughout the whole ship once the return flight was begun, as if all aboard anticipated in tense nervousness some dreadful event.

A short time in the air, and then the wind took up its shrill screaming again through landing gear and exposed struts. The ship wheeled into the face of the blizzard, its helicopters roaring in the air wash of the forward blades straining to keep even with the gale. They were descending slowly, carefully, and Rosson could only marvel at the expert handling of the plane, as the pilot kept an even rudder, tipping the wings but little in a dangerous descent. Footsteps sounded along the corridor. It was Rokol.

"Come," he ordered, and he stepped back to let Rosson precede him down the corridor. In the forward compartment of the plane he pointed out of a side window. "We now on top Mt. Helland Hansen near big insulator," he explained, looking up at the engineer. "How high power-beam over mountain here?"

CHAPTER IV

Playing With Lightning

● Mystified by the little Martian, Rosson answered: "About a thousand feet over the insulator. Why?"

"Find out soon!" At this moment the plane contacted ground, and Rosson could see in the brilliant glare of the landing floodlights that the wind although decreasing in strength, was whipping the dry snow up in clouds and whirling it off into space over the side of the mountain. The armed men from the rear compartment came forward at a command from Rokol, and filed out of the ship into the bitter night, bending to the wind. Rosson and his captor followed.

"What are you going to do with me?" asked the engineer, conscious of the small-man's weapon directed at him.

"Nothing. You answer questions." Rokol looked off at the insulator a bit higher up a slope near the tip of the peak, almost a thousand feet away. "What disc on pyramid insulator for?" he asked, indicating the disc fully ten feet wide that spread out above the insulator on a ring of thick bolts.

"That's connected to the primary elements of the demagnetizer below," Rosson explained caustically, "you're an engineer—you ought to know that!"

"And if element broken, then beam come down?" Rokol quizzed.

In a sudden flash Rosson divined the small-man's motive. "You fool, if you tamper with that insulator, you'll have all this magnetic ore around here drawing that beam down on your heads. Thousands of kilowatts!"

"Oh, different ways of doing that!" exclaimed Rokol, taking a powerful-looking gun from a man at his side. He glanced up into the snow-filled atmosphere. Rosson

followed his gaze, and with an unpleasant thrill saw the beam vibrating dimly up there in the storm. A vast stream of power surging in mid-space. And Rokol was going to accomplish his fiendish scheme of holding up communication by grounding it down here! There was a bright stab of light against the night sky, and Rosson jerked his head down in time to see the top of the insulator outlined in brilliant flashes of purple.

Horrified, he shot a quick glance upward again. It was still there—but for how long? A sudden tension in the atmosphere sent frightful, uncontrollable shivers over Rosson. Terrific lines of force were up there tightening in a fierce struggle to bridge empty space. A sinister battle in the invisible world of ether, wholly unaffected by snow and wind. Pulling, pulling inexorably groundward. An oppressive, maddening hum filled his ears. The dielectric was breaking down! At any instant now it would happen. Instinctively, Rosson flinched.

Suddenly, a luminous stream of energy detached itself from the beam, and started to pour earthward. It struck the disc of the demagnetizer, and wavered in air like a slender nimbus. Then it grew and strengthened rapidly. The top of the insulator glowed brightly as the electrical cataract fused it. There was a loud snap.

Apprehensively, the small-men began to move back from the bright display. The disc flamed in a sudden orange-burst, and then flowed to the ground over the porcelain pyramid. Instantly, the whole beam came crashing down in one continuous, blinding bolt of man-made lightning accompanied by a tremendous thunder clap. A river of liquid fire pouring out of the bottom of the skies.

Violently, a crooked web flashed out from the main stream to ground, sputtering over the snow, and throwing it up in little puffs and melting the ice below it. Then the rest of the beam followed the jagged feeler, blasting the snow off the rocks in sudden explosive clouds. It was beginning to follow the veins of magnetic ore. The bluish light reflected weirdly on the surrounding peaks.

Helplessly, Rosson looked on. The deed was done. Now, hundreds of lives would probably be snuffed out in space. And then the engineer stumbled backward in fear. The beam was starting over the side of the mountain, blasting rocks and thick-ribbed ice out of its path. A small avalanche rumbled down the steep slope ahead of it. It was then he sensed the horrible, impending catastrophe.

"Look!" he shouted at Rokol, pointing at the beam, "it's going to reach that glacier—blast it loose and send it down the side of the mountain upon your colony!"

Even as Rokol looked, the beam surged downward toward the head of the glacier. A startled expression of fear and misgiving flitted across his baby face, as he saw for himself.

"*Aileida!* The beam, Rosson—what we do?" he cried, abandoning his role of aggressor in sudden terror. The men stood behind him in stunned helplessness.

In one revealing flash Rosson saw in his mind's eye a possible plan of action. Whirling, he started off for the plane. "Follow me!" he yelled lustily over his shoulder. Danville . . . down there in the mountain-locked valley—helpless, along with the Martian women and children. It made a terrifying, vivid picture.

At the ship Rokol entered after him, wheezing and coughing, looking to the engineer for leadership now that the vast stream of power was out of control.

"Take me down there on the plateau, Rokol—quick as you can!" Rosson ordered, "we must find my ship. I need the magnetic buffers."

● Wonderingly, the little Martian commanded his pilot to lift ship. Desperately, the plane fought its own way into the blizzard, and then dived rapidly for the plain below. A landing floodlight snapped on, a moving bright spot on the white earth that traveled rapidly with the ship. Sweeping the ground below with the beam, Rosson quickly picked out his capsized plane.

The descent was a haphazard one with the engineer unnerving the pilot with his pleas for greater haste, and that caution be damned as a silly virtue with lives at stake. Instinctively taking command, Rosson took several small-men with him to his plane when they landed. High on Helland Hansen a lurid, lacey flame was spewing itself upon the mountain. He'd have to hurry.

In the jumble of the cabin he found the buffers—compact, heavy instruments four feet high with concave discs on top. They were the hand operated insulators, the electrical mechanisms of similar polarity to the power-beam that accumulated a tremendous repulsive charge on the concave discs buffeting the beam back into the sky on its course. A wonderful tool. And one requiring courageous handling with such vast power to manipulate. After a cursory examination Rosson found them intact.

It took the three of them to carry one of the two buffers out to the waiting ship whose great propellers were whirling madly to match the wind. As soon as they had brought out the second one and placed it in the ship, the pilot sent the plane into a perilous ascent, wheeling with the storm. Rosson braced himself on the slanting floor, and began explaining the operation of the buffers to Rokol.

"The way we'll operate this is place the other instrument in a second plane, and work together side by side," he explained, breathing audibly from his exertions. "We'll start back at the next insulator, and fly under the beam about 500 feet apart with these concaves pointed at the beam. In that manner, Rokol, we'll gradually lift or force the power-beam into the air again on its course."

"But what of permanent insulator?" objected Rokol.

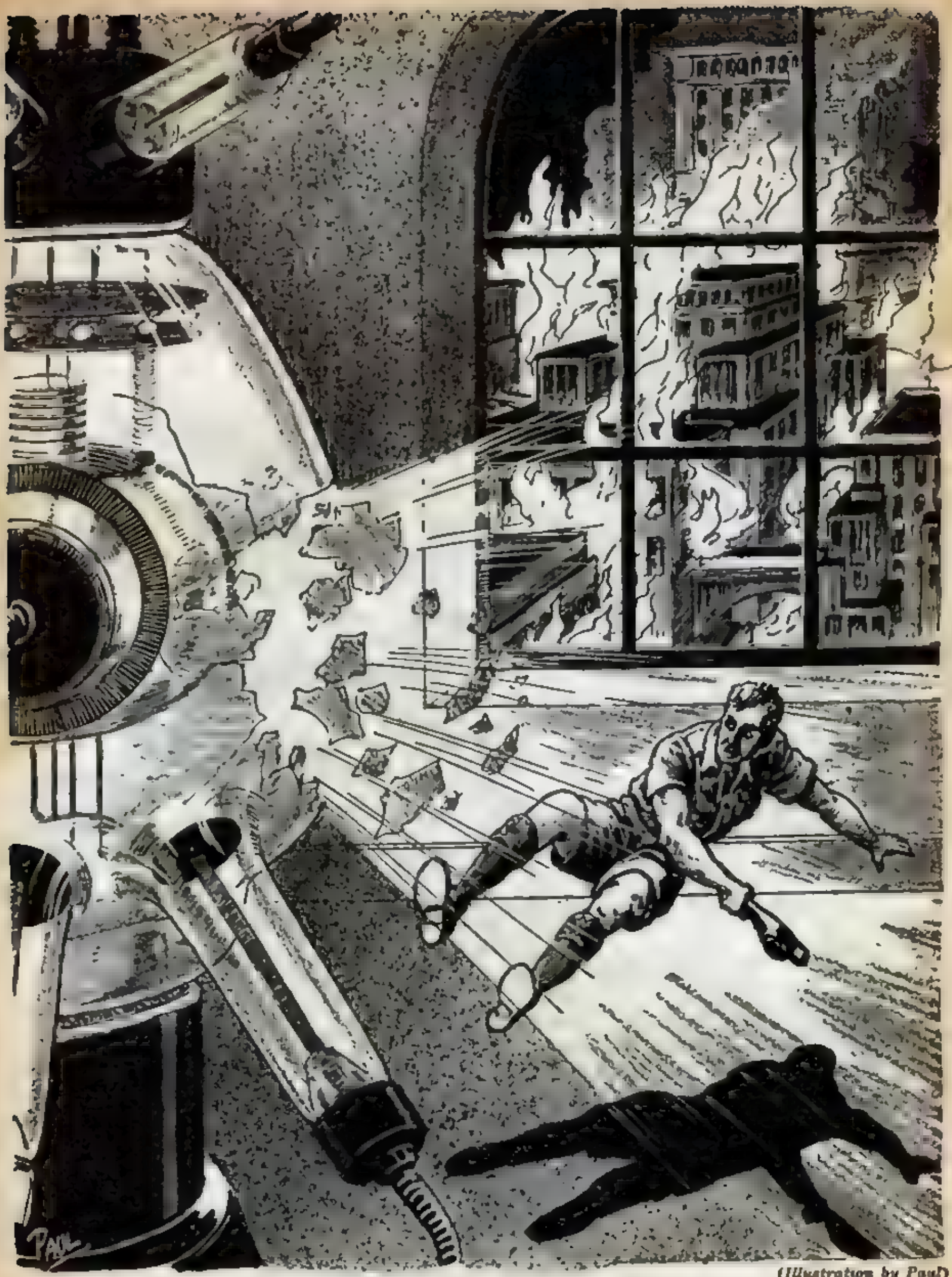
"After we've got the beam up we'll land on the site of the old one, and have Radcliffe send a crew of men with a new one—but, here we are!"

Rosson indicated the great curving stream of visible power arching over the mountains that could be seen as the plane turned into the teeth of the blizzard again, preparing to land. "Now, have you got that all straight, Rokol? Because we've got to start immediately. I'll take another plane and you take this one—the buffer is rightly placed. I'll communicate by radiophone with you to direct your movements.

"I understand," was Rokol's laconic reply. He looked up at the beam a little timidly.

A badly frightened crew of small-men obediently helped Rosson transfer the second buffer to another plane. For several valuable moments he worked over the machine adjusting it in place. Then, stationing himself at the phone, he snapped out the order to ascend, automatically trans-

(*Concluded on page* 472)



(Illustration by Paul)

Out of the shattered coils and tubes, like a giant's breath, came a wave of force that picked me up and flung me against the far wall.

CHICAGO 2042 A. D.

By PAUL BOLTON

● The following historical document was found in the archives of Leser-Detroit, where it had been for centuries, since the death of its author. Of Vann Wakefield we know nothing save what is in the manuscript. Of his protagonist, Jerry Ratoni, books have been written. Wakefield's story throws new light on the last of the supergangsters. Historic fate of all men of eminence, Ratoni's career has inspired many a legend, obscuring his real person.

Wakefield brings us a picture of the man; he reduces the gang overlord to terms of everyday life. For that reason, if for no other, the manuscript would be valuable. But it does more than that. It clears up many points that have heretofore been mysteries. Moreover, it gives us one man's reaction to the trying days in which he lived. As a true, although in spots inadequate, picture of those times, the manuscript has authentic historic value.

Its editors have confined themselves almost wholly to modernizing the language employed. We call particular attention to the idiomatic language of gangland, scattered throughout the manuscript, which we have transferred, as nearly as possible, into their modern equivalents. Many of these expressions are vividly self-explanatory. Others may be found unintelligible. Still others, impossible of intelligent transcription were deleted. In these expressions, the reader may find the inspiration for words or phrases frequently and commonly used today, evidencing the tremendous effect upon our national life exerted by the wolves of the underworld.

One further notation: Wakefield must not be regarded as an historian. He had one story to tell, his own. He wrote for contemporary consumption, hence neglected to enlarge upon many of the larger aspects of his scene, and even some of the detail which was familiar to him. We have annotated carefully but feel that this is, at best, a makeshift method. But these inadequacies should be overlooked by the reader interested in the human document of one man who lived through two stages of one of civilization's dark ages.

Done at Leser-Detroit, Federation of Americas, 18th of October, 2508, A.D., by Lars, III, librarian, and assistants at the Baden Memorial library.

CHAPTER I

The Rise of Ratoni

● Zooming down a sultry sky, three airplanes droned steadily toward Chicago. Two were small, fast monoplanes; the third a large cabin ship. In the cabin ship was Frank "Babyface" Julius, vice-lord extraordinary; and in the smaller ships were his ever present bodyguards.

Babyface Julius dreaded trips of any kind, air or ground. The presence of his "fingers," the bodyguard, in fast fighting ships, could not alleviate the uneasy fear which gripped him when another plane on the important St. Louis-Chicago air route zipped by. For Babyface Julius lived in constant fear of death, fear of being put "on the spot" as he had put many a rival—the inevitable price of eminence in gangland.

As the three planes neared Zion, Illinois, a patrol of nine planes which had been flying in huge circles high overhead, hardly visible from the earth, nosed downward. From the V of this group came a tracer bullet which left behind it a long tail of smoke. As if in answer, the motors of ten planes roared simultaneously, and another V rose from the ground, headed toward Julius.

The observer in the rear guard plane first spied the attackers. He shouted excitedly and the pilot nosed forward abreast of the cabin plane, gesticulating frantically. The huge plane shot forward at high speed. As it sped through the air, the V above altered its course in a huge parabola, headed inexorably toward Julius, steadily cutting down the space that separated them.

Suddenly from a score of guns came the rat-a-tat-tat of machine guns. The cabin plane coughed, wavered, and side slipped sickeningly toward the earth. In a few moments all that was mortal of Babyface Julius was wrapped in a flaming shroud. He was the first gangster "taken for a ride" in an airplane; and his death gave a new meaning to an old term. He had been "given the air."

Babyface Julius met his death August 1, 1935. The

● That the gangster and racketeer are menaces, no one doubts. But how many people look ahead to predict the course of history should his power increase. Recently in Chicago an impudent hold-up man walked out of court because his machine guns were preventing witnesses against him from testifying. The prosecuting attorney confessed that the gangster was stronger than the police force of Chicago.

Robber barons of the Middle Ages dominated all trade and transportation and no one could use the roads without paying him toll. Such might be the condition of the future. This would be especially true if gangsters adopted the discoveries of science and used them before their dull-witted opponents.

Many will believe this story to be fantastic; yet our forebears of 1850 would be more incredulous were they to return and see the state of affairs of today.

same day, Jerry Ratoni indirectly announced his ascension to the throne.

The sensational story of the sky battle was spread all over the front pages of the nation's newspapers,* that afternoon. At six o'clock the early editions of the morning papers appeared on the streets of Chicago, and in two of the three morning papers appeared a full page advertisement—Jerry Ratoni's bid for underworld leadership. The third paper, for ethical reasons, had declined to print it.

"Jerry Ratoni, Inc.," said the headlines on that advertisement. The announcement continued that one Jerry Ratoni, hitherto unknown, had purchased the Neuvo Laredo, Mexico, distillery formerly owned by the Schwartz interests and would shortly be running at full capacity. All liquors from the distillery, the announcement continued, hereafter would bear the name "Jerry"† and the quality of Jerry liquors would be guaranteed to purchasers "in any part of the world."

"Be satisfied; buy from a Jerryman," the ad. boldly concluded.

● When a man bites a dog, that's news. Ratoni needed no other advertisement. Press associations verified the authenticity of the advertisement; newspaper correspondents at Laredo, Texas, across the border from Nuevo Laredo, reaped a small fortune in a few hours; and on the front pages of other morning newspapers, the story of Julius' death was paralleled by the story of Ratoni's advertisement—with much speculation on the identity of Ratoni, the man who had thumbed his nose‡ at the United States government.

There was a nation-wide clamor for the immediate arrest of Ratoni, as the murderer of Julius, as well as for insolence toward the government. In the midst of this clamor, Jerry walked casually into the office of the State's attorney at Chicago, introduced himself, commented that he had seen his name in the newspapers, asked if there was anything he could do for the police, and then, quite as casually, walked out again; for there was no charge upon which he could be held. Many months later he submitted to arrest for income tax evasion and served three months imprisonment. Those three months constituted the sum total of his prison record.**

*The newspaper was a printed daily sheet which once was the principal method of imparting information concerning world or local happenings. It was displaced late in the 20th century by the radio. Newspaper publishers were first to sense their fate. As early as 1931, prominent publishers declared the radio had become a rival which should be subject to the same restrictions as the newspaper in regard to advertising. Advertising was the principal source of revenue for support of the journals under the intricate financial system of the times, and the inroads made by the radio upon advertising revenues finally swamped the daily journal, although many kept on at a financial loss for years in an inane effort to "uphold the traditions of the Fourth Estate."

†Students of Americana here may find, for the first time, the origin of the name for our "Tom and Jerry," although the origin of "Tom" is not explained.

‡Literal transcription. Meaning obscure but apparently a gesture of defiance or contempt.

**Wakefield here assumes his readers would be as familiar as himself with conditions in those days. Under a law known as the prohibition law, the transportation, sale, and in some circumstances, possession of liquors, was a crime, punishable by imprisonment and fines. This law was openly and flagrantly violated. Those who sold forbidden liquors were "bootleggers;" those bootleggers who extended their activities into operation of gambling enterprises, sale of narcotic drugs, and other vices, were gangsters, or "racketeers." Ratoni's immunity from imprisonment was by no means uncommon. Gangsters were often forced to pay heavy tribute to the government, in the form of "income tax" on their illegally obtained revenues, and in some cases penalized for falsifying concerning the amount of these revenues; but were seldom punished for the very illegal activities which resulted in those revenues. The ends of justice often were ill served by the law.

● I, Vann Wakefield, who write this chronicle, describe the Ratoni coup so that my readers may have a true picture of conditions as they were in 1935 and thereafter.

There is much to tell in this narrative of gangdom's dictatorship and my small part in it. I was secretary to a great newspaper publisher; I became, in the interests of humanity a Jerryman, a follower of Ratoni.

After the death of Julius came the inevitable conflict with the leaderless Julius gang and the inevitable triumph of the Jerry gang. Through a system of forced tributes, or rackets,* the Jerrymen soon controlled a score of legitimate business enterprises, besides directing the dope, liquor and gambling trades of the nation.

Occasionally a suspected Jerryman was caught. If convicted, chances were that he would be freed within a few months, buying or shooting his way out. At least six of the appalling prison breaks of 1937 were laid at Ratoni's door; there were fewer thereafter, for fewer Jerrymen were imprisoned as more officials were purchased. Like a giant human octopus, the Jerry gang spread its tentacles into every important city in the nation. America was on a debauch, comparable only to that which preceded the fall of Rome.†

I sketch now with a broad brush, purposely careless of detail. A few of many instances may suffice to illustrate the rough-shod Ratoni methods: The assassination of Governor Roberts of Texas, whose private resources and unimpeachable conscience made him immune to bribery when Ratoni sought freedom of the air for whiskey planes bound northward from Nuevo Laredo; the siege of Harlem Flats in New York, when seven Jerrymen, caught red-handed after they had beaten to death an aged merchant who refused to pay tribute, were captured only after they had shot down five policemen and three bystanders—and then were acquitted by a corrupted jury, on a plea of "self defense"; the daylight looting of the Republic Bank of Oklahoma City‡ in which five innocent persons were wantonly slaughtered; and the kidnaping and subsequent treatment of Joyce Lomac, daughter of another incorruptible, Mayor Lomac of New Orleans, a strategic city in Ratoni's plans. Miss Lomac died by her own hand three days after she had been returned, "as a lesson," to her father's home.

With this incomplete survey I come to the Council of 46.** That organization, which took its name from the number of its original members, was planned by five men:

*Small business men were forced by gangsters to pay tribute, i.e., to pay sums of money as "protection" against marauders, the marauders being the same gangsters who collected the tribute. Failure to pay tribute meant destruction of the merchant's physical plant, sometimes injury to himself. This was known as a "racket."

†Rome, one of the great cities in the infancy of the world's history, fell a victim to its own moral degeneration. It is interesting to note that Rome's last days saw roving bands of outlaws, comparable to the gangs of the 20th and 21st centuries, preying upon the inhabitants. Quite likely, Wakefield has this parallel in mind. He was not the first to note it. Another parallel is found by the historian in the gangsters' "rackets" and the feudal system of a few centuries before. In both instances the producer was forced to share with the non-producer, in return for spurious "protection." The feudal lord punished with pillory and prison, rope and sword. The gang lord punished with knife and pistol, dynamite and destruction.

‡Banks were depositories for gold and silver, metals used then as mediums of exchange in trade and commerce.

**It is difficult to understand the reasoning of the Council of 46. Their's was a foolhardy, albeit courageous attempt to cure the patient by striking off an arm, when the poison had penetrated into the blood stream. We know now Ratoni was but a symbol. His successor, and his successor's successor, stood ready for their coronation, as one boil succeeds another until the poison is ejected from the system.

John M. Randolph, publisher of the New York *Evening Sentinel;* Erasmus K. Shelby, retired educator; Dr. Julius K. Seidel, famed psychologist; General Paul J. Sterling, former governor-general of the Philippines and Jasper Canby, multi-millionaire public utility owner.* I was present as confidential secretary for Col. Randolph, in whose home the meeting was held.

Without preamble, Col. Randolph plunged into his subject.

"Gentlemen, you and I know this nation is faced with a threat without parallel in the history of mankind, a threat the more ominous because it is financed and condoned by the masses of the people, unable to see what lies before them. I do not know whether we can avert the impending catastrophe; I do know we can try. Gentlemen, I propose to you that we wipe from the face of the earth Jerry Ratoni and his followers, before Ratoni becomes dictator of the nation!

"My four friends here and I have talked over the situation from every possible angle. We have finally reached one conclusion. You do not arbitrate with a rattlesnake; nor do you hale him into a court of law. You strike, and you must strike first. Jerry Ratoni is the snake. He lies coiled, ready to strike; his goal, subjugation of the American people.

PAUL BOLTON

"Authorities are useless—worse than useless, since many are Ratoni's allies. We must depend on our own resources, and I propose, if you will join me, that we fight him with his own weapons, fire with fire!"

He outlined his plan, essentially, simply. Members of the Council were to worm their way into the Jerry gang, mark its men, learn its secrets, determine what politicians were in Ratoni's pay—in short, expose to the council the complete intricate network of the gang. When we were ready we would strike, and strike with all our strength.

So was formed the greatest secret organization since the Ku Klux Klan.† Membership in the council spread rapidly across the nation. Soon the Jerry gang was honeycombed with Council members. When a stubborn minority in Congress defeated a proposed repeal of the Volstead act‡—despite urgent appeals from the Anti-Saloon League, the W. C. T. U.** and other temperance organizations, council members furnished a list of those who voted at the behest of Jerry, who profited too greatly from prohibition to see its repeal. We learned the names of business men secretly aiding the gang leader; of his sources for drugs, and thousands of other details. We had decided to take our case to the courts only if we were certain we could win there; otherwise we would appoint ourselves judges and executioners. First we wanted all the facts, so that no innocent man would be harmed, nor a guilty one escape.

● So I became a Jerryman. How?—would make another story. Suffice to say that I started as a worker in the distillery at Neuvo Laredo. I was promoted—because of my youth, strength and ability at the controls of a plane—to rum runner.

As a rum runner, I came to know Ratoni, and this personal contact led me to the trusted position of pilot on his cruiser, a light dirigible in which he journeyed from the Mexican border to his American headquarters in the Zenith building, latest giant of the Chicago skyscrapers.*

Ratoni fulfilled the gangster legend. A well-knit, bulky, dark man, something of the prize-fighter and something of the business man mingled in his face. Ratoni was a business man; he had applied big business methods to the rackets. He was soft spoken, quietly dressed, unobtrusive. He did not seek publicity; not for him the luxury of a winter home at Palm Beach. I never saw him perturbed or disheveled until that fateful March 18, 1940.

There was another in his office, even more mysterious, to me, than Ratoni himself. I met her the first time Ratoni called me in. When I entered the outer office of his suite at the distillery, she gazed hard at me, then asked coolly:

"Well, what do you want?"

I stifled an impulse to slap her and answered Ratoni had sent for me.

"Okay," she said. "You're the new one. Thought maybe you were trying to crash the gate. Just a minute."

She stepped into Ratoni's private office and a minute later the "Big Shot" himself came out.

"You're Wakefield?" he questioned me. I admitted my identity, still smarting a bit under my abrupt reception. "You must learn to know Miss Wentworth," he went on. "She handles all your reports. Come in here."

We went into the inner office, and Ratoni questioned me in detail about my past. He finally appeared satisfied and outlined my work.

There followed eighteen of the most thrilling months of my life, through which, acting under Council orders, I became in every sense of the word except loyalty, a Jerryman rum runner. It was also eighteen months of planning by the council—and eighteen months during which a curious disquiet crept into my heart as I learned to love a gangster's secretary, automatically branded a criminal by service to a criminal.

I could learn little of Alice Wentworth's past. She was about 28 years old, three years younger than myself; a

*Public utilities or power companies, paradoxically, were owned by private citizens.

†Vigilante societies of the United States organized after the Civil War, 1865.

‡Volstead act: the prohibition law, previously noted. Its repeal by Congress in 2071 A.D. was an empty gesture, since it had long before been forgotten.

**We have been unable to determine what organization these initials denoted.

*Skyscraper: a form of city architecture peculiar to the age when the exodus from the country to the city sections was at its height, and space in cities at a premium. They were built hundreds of feet into the air, towering toothpicks of steel, masonry and glass, each with office space for thousands of drone-like office workers.

tall, cool, efficient blonde, self-contained but an interesting, intelligent companion in our idle hours. With me, she seemed to drop her aloofness become less constrained and more free. And as my affection for her grew, there also grew in my heart a conviction that this girl was not a criminal, despite the damning evidence against her.

CHAPTER II

A Catastrophe

● Plans of the Council were nearly ripe; but their fruition came with breath-taking suddenness.

One day in March, 1940, Alice called me. "We're going to Chicago tomorrow," she said. I had then been promoted to the place as pilot on Ratoni's dirigible. "Let's spend the evening in San Antonio."

That suited me fine. We flew up in her couplane, and information she let fall in our casual conversation on the way sent me posthaste, at the first opportunity to absent myself, to call Col. Randolph on his private wavelength.*

"Ratoni has called a meeting of fifty of his principal agents," I whispered excitedly. "They are to meet in the Zenith headquarters tomorrow at 2 o'clock. Don't know what's up!"

Col. Randolph's answer was a long whistle. "Wait a bit," he said, "I want Sterling to hear this." I heard him buzz Sterling's home in Chicago, and soon came the general's voice. "What's the excitement?"

"Vann's on the line," Randolph said. I repeated my story.

"Gad!" exclaimed the general. "You're sure of your facts?"

"Absolutely. Got the news from Jerry's private secretary."

"Are you sure you can trust him?"

"It's not a him," I explained, hoping the air did not carry my blush from San Antonio to New York and Chicago. "It's a her!"

"Oh!" came over the air accompanied by what I suspected was a smothered laugh, "I see!" Then Col. Randolph spoke.

"General, are the detectors in place?"†

"The building is honeycombed with them."

"How many men can you muster in Chicago in a hurry?"

"At least 200. What do you mean? Not—strike?"

"Yes," came the curt response. "The opportunity is golden. By tomorrow night Ratoni and his leaders shall have been wiped out of existence. I'll see you early tomorrow."

Sterling was still dubious. "But Colonel, the courts—"

"Damn the courts! Do you think we ever would have such an opportunity again?" And Sterling agreed.

As casually as that plans were laid for what resulted in the most horrible catastrophe of the 20th century.

Shortly before noon the next day we moored to the tower of the Zenith Building. Ratoni and Alice disembarked, but to my chagrin, Ratoni gave me strict orders to stay aboard, ready to take off at a moment's notice.

The meeting was to take place in Ratoni's council chamber at 2 p. m. At 2:30 p. m., the Council's raid was scheduled. I debated what course I should follow. In the council's attack, surprise would be the deciding element—that moment in which sub-machine guns, revolvers and shot-guns could be brought into play.* It would never do for me to arouse Ratoni's suspicions. This consideration decided me to stay at my post until a few minutes before the zero hour, and then descend to the council chamber, on the 98th floor, just in time to be in on the kill.

For two interminable hours, during which my anxiety increased with every passing moment, I paced restlessly through the dirigible, or from the observation platform attempted to pierce with my gaze the swirling smoke and fog which encircled the tower of the building. At 2:15 I decided I would wait no longer, and at that moment Ratoni signalled me. It was the raphone buzzer, I stepped to the vision plate, cursing my luck, and tubed in.

A misty picture grew on the shield; Ratoni made no effort to clear it up, as his message was for my ears. I could discern the long table, around which the gangsters gathered for their infrequent conferences with their leader, and around it the blurred figures of the gangsters. A curious hissing noise came from the loudspeaker, and I finally decided it came from a curious box-like mechanism in the center of the table, over which one of the men was working. From one end of this box protruded snout-like barrels, like those on a sawed-off shotgun.

But in that blurred, incomplete view, one thing caught my eye and left me horrified. Ratoni, his broad shoulders turned to my view, was seated at one end of the table; and by him, notebook before her, sat Alice!

She had said, the night before, she planned to do some shopping in Chicago, and I, unthinking, had supposed she was at this moment in one of Chicago's department stores, safe from the carnage planned by the Council of 46. Now she would be mowed down with the gangsters, as a gangster—and I was helpless to prevent her execution!

● Ratoni's whisper came to my ears from the concealed transmitter at his end of the table. "Get ready to go like hell," he said. Even as he spoke he rose—and Alice rose with him. Evidently he feared something, and if not the Council, then the black box. My mind whirled with aimless conjecture. But before I could collect my thoughts, Ratoni and Alice had threaded their way to the lift, stepped in, and shot skyward. In that moment, I failed in my duty to mankind; for to save Alice I saved Ratoni. I jumped to the controls and was ready to go when the elevator reached the tower.

Ratoni flung Alice to my arms and leaped after her, shouting as he leaped: "Let her go, for God's sake!" Terror was in his voice and his eyes. As we shot off into space he looked down upon the Zenith building, for the last time. I followed his gaze, and there saw a sight I shall never forget.

Like a stately dancer in a minuet of yesterday, the building was swaying back and forth, slowly at first, then faster

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*Presumably the radio-phone, temporarily popular pending development of the television with which it was combined. We find later reference to the "raphone" combined with "vision plate," forerunner of the vuefone, the ravue, and many other inventions combining visual and audible communication.

†Lips omb of New Boston has published a noteworthy monograph on crime detection methods of the 20th century, including a description of the dictograph and its successor, the radio ear or detector. Hidden in rooms where suspects gathered, these instruments recorded conversation, which conversation was admitted as evidence at trials.

*Fortunately for the good name of the American people this bloody massacre was forestalled. Undoubtedly leaders of the council were monomaniacs.

until it appeared as in the grip of a mischievous Brobdinnagian. As I followed its sickening surges, Ratoni, standing at my side, caught my arm.

"Look!" he screeched. "Look!"

The building seemed to sway far out over Michigan avenue, and this time its towering top did not sway back into place. Little puffs of dust showered out from its sides as a huge segment of the upper portion literally broke off and floated, like a picture in a slow motion film, down toward the terror stricken crowds who had gathered below.

In those few brief seconds I saw many things which today I cannot definitely say happened. I thought I saw men jump from that falling segment, to mingle with the masonry and dust that trailed, like stardust in a comet's tail, down toward the pavement. I saw them clearly then; but now I do not know, for I saw but an instant. They were wiped out in a dull boom which swirled our ship in a mighty whirlwind and tore away our consciousness.*

Down, down, I fell, sometimes with a rush of speed, sometimes floating lazily. I tried to reach out and touch the sides of the black tunnel, but as I reached they receded. I was dimly conscious of clinging fast to a thin rod of iron. Then the abrupt shock of cold water ended my fall. I choked, fought desperately, then blackness.

A giant bee was singing at my ear. I brushed at it impatiently, then opened my eyes. Alice was bending over me. Ratoni sat in a nearby chair. Their garments told me they also had fallen into water. Before an unfamiliar instrument sat a fourth person—a man, his hair unkempt, his legs and torso bare, his only garment a pair of short trousers like those worn by Boy Scouts.

I still recall vividly my emotions. First, thankfulness that Alice was still alive; second, horror, in a remote sort of way, as I recalled the last grotesque dance of the Zenith building; and finally curiosity to know what had happened. The curiosity was of the detached sort, such as I might feel concerning an event that transpired long ago to another person. I put down these sensations for what they are worth in the light of what I shall disclose presently.

My first question was a normal one. "Where are we? What happened?"

"Nix!" This came sharp and curt from Ratoni. "We don't know where we are nor who . . ." He nodded suggestively at the man seated before the instrument, and I subsided.

Again that buzzing, and I realized now it came from the machine, reminding me of a raphone yet strangely unlike one* As I looked, there was a click and a picture, perfect in detail, flashed on the screen which stood upright just above the instrument board. It was an office in which were four men, fat, sluggish looking fellows. They, too, were clad in the shorts and sandals which made up our host's attire, wearing in addition light blouses of vari-colored silk.

"Crazy Kriml reporting the rescue of two men and a woman in Lake Michigan." It was the man sitting before the instrument board speaking. A voice out of the machine spoke:

"Yeah? Why tell us? Want a medal?"

The back of the man who called himself Crazy Kriml turned a mottled crimson but he answered respectfully. "One of them still unconscious, and the other two refuse to talk or answer questions. They have no papers, and are queerly dressed. I supposed you would want to check up on them."

● The fellow in charge lifted his feet wearily from the desk. "Oh, all right," he said, "let's have a look at them." He made adjustments at an instrument before him, then stared intently at the screen. A grin spread over his face. We heard ejaculations.

"By the Great Lord Harry. Shirts and collars and ties and museum pants!" The other men crowded around and laughed, while the three of us, especially Ratoni and myself, glared futilely at the screen and felt extraordinarily foolish. "Okay, Kriml. Bring 'em to sub-station 1. I'll have a boat start out to meet you." The picture faded as connections were broken. Kriml turned to the controls and I felt the boat rock as we picked up speed, although I heard no motor.

We were on a craft about fourteen feet long by six feet wide, very much resembling a sled in appearance and in the manner in which it literally slid across the water. The cabin was glass-enclosed. I saw no signs of motive power.

I ventured to address our host. "Beg your pardon, but would you tell us where we are?"

"Lake Michigan, headed toward Chicago." He turned deep set piercing black eyes on me, showing a scraggly iron-grey beard and a high forehead, hidden behind locks of uncombed hair. "Who are you, and where'd you come from? You pop out of the air and into the water like so many jack-in-the-boxes, almost upset trying to keep from hitting you. What's your game?"

I started to answer when from behind me came Ratoni's voice. "I'm doing the talking for this outfit, and I'll do it at the right time and place!" His words were addressed to the old fellow who pulled us out of the water, but I felt they were meant for me, so I asked no more questions. We pushed on across the water and through the mists I could see dimly the outline of Chicago.

*From what Wakefield tells later, gleaned from Miss Wentworth and Ratoni, and from what we have gathered from other sources we have reconstructed a partial account of the fall of the Zenith Building.

In Ratoni's council chamber was one who was neither gangster nor spy. He was Thornton Cassimir, eccentric inventor (all inventors who advanced revolutionary ideas in those days were called "eccentric.") We find Cassimir named, in the memoirs of James Z. Stone, financial genius who died in 1953, as one of many "crazy people" who attempted to obtain financial assistance from him. Cassimir, Stone said, declared he had found a way to release the latent power of the atom through partial disintegration, or transposition, of its component parts. Stone relates that he laughed at the man. That Laugh caused the destruction of a great building, the death of thousands of people.

Cassimir, repulsed by Stone, turned to Ratoni. The criminal element, it may be noted, were receptive to the offerings of science. The bootleggers advanced chemical science notably in their experiments with the illicit manufacture of alcohol, and some of their engineering feats, particularly New York tunnels built without knowledge of authorities in the nineteen thirties, won the open admiration of their contemporaries.

Ratoni declared Cassimir told him only that he had stumbled upon a remarkable new force which could be utilized as a weapon. The inventor would not set a price upon it but wanted to demonstrate it to Ratoni, and obtain financial aid in completing his experiments. We cannot say now what this force was; its efficiency is beyond dispute. Apparently Cassimir failed to control it. Ratoni sensed something was wrong at the demonstration and fled precipitately. His followers died. Died also members of the council of 44, who had just entered the building; at least five thousand others in the building; scores in neighboring buildings shaken as though by an earthquake, and scores who had gathered as mobs gather in the streets.

We believe today that Cassimir partially tapped the power stored in the atom, some two hundred and fifty years before it was time. Unfortunately we do not know. Cassimir was not connected with the Zenith holocaust until the Wakefield manuscript was found. Indeed, the contractors of the steel substructure of the building were tried for murder, in the belief that faulty materials had caused its collapse.

*This was Wakefield's introduction to the vuefone.

A craft was approaching us. "Kriml, ahoy!" came a shout across the waters. Our host responded in a loud-speaker at hand and soon we pulled alongside. On the side of the new boat—a larger model of the one which rescued us—I read "Lake patrol, 899, Chicago Police." A chubby, moon-faced fellow was in charge, his fat legs grotesquely out of place sticking from the shorts. "So you're the comical strangers Kriml picked up, eh? Well step lively." Again we scooted across the water, leaving Crazy Kriml behind. And in a few minutes the city loomed over us.

I had been watching the skyline through the mists and smoke as we approached with dismay. Now I looked upon it in a veritable panic. For it was not our Chicago. Where the Zenith building had stood—a few hours ago—there now was reared a mightier and more majestic structure. Not one of the buildings did I recognize.

And these great structures were connected, one to another, by long, shimmering threads of steel, which glittered in the sun as dew on a spider's web. Down these threads rolled huge balls of glass, perilously balanced between these strands of wire. About the tops of the skyscrapers fluttered what at first appeared to be hundreds of birds, but which I recognized, as we drew nearer, as helicopters, quite similar to the ones we had experimented with at Nuevo Laredo last week. My view was abruptly cut off as we entered a tunnel, the dense black of which was cut by a searchlight on the prow of our boat.*

CHAPTER III

A Hundred Years Later

● Our boat stopped before a door, outlined by a dim red light above it, which we discovered to be the entrance to an elevator. In it we stepped, and were shot upward. Our guide led us down a long carpeted hall and stopped before an ornately carved door. Before knocking, our chubby-faced guide turned to us.

"You look like strangers," he said, "so here's a tip. You're going to see the Big Shot. Sort of watch your step." He lifted the knocker and in a moment the door opened.

We looked into the most elaborately over-furnished apartment I have ever seen. A butler was at the door; he motioned us in. Thick expensive rugs were on the floor; murals, entirely unrelated in subject or method, lined the walls, interspersed with countless mirrors; a grand piano seemed entirely plated with gold; and over all, like a pall, hung a heavy, heady perfume that made my head swim. I glanced at Alice. She had lost her usual aloofness and was gazing about like a delighted schoolgirl. I distinctly heard her giggle as we passed through the two rooms and up a short stair to where the Big Shot awaited us.

Words fail me in attempting to describe that room. We were now evidently in a penthouse atop the roof. The Big Shot had not only the penthouse but the whole upper floor as well for his apartment. Through one door I caught a glimpse of a marble bath pool, in the midst of a sunken garden. Another side opened out across the lake. Grotesque statues in comic strip poses were scattered about the room. And in a huge throne-like chair, on a raised dais, lolled the Big Shot himself. My heart sank as I recognized the type: The racketeer in natural evolution.

As we gazed speechless at him, I was reminded of the real or legendary Bavarian king who could walk only with the aid of a wheelbarrow, trundled before him to support the weight of his enormous paunch. Fat, gross, pig-eyed, he gazed at us as we at him; then began to laugh—a silent ripple that shook his whole body before it became a coarse guffaw which left him purple and apoplectic. Our trousers seemed to be the principal source of amusement, along with Alice's skirt.

Ratoni clenched my arm and whispered into my ear. "I've got this figured out, I believe, kid; least I think I have. If I can find out one or two more things we'll pull a fast one. Back me up!"

When the Big Shot and his two bodyguards had exhausted their merriment—and the Big Shot recovered from incipient apoplexy—he began questioning us.

"Well," he said, "who are you?"

Jerry whispered to me: "Poker face, kid," and instead of answering, walked to a nearby table upon which was a box of cigarettes, extracted one, and calmly lit it. Then he sat on the edge of the table, swinging a leg. At this display of insolence, the Big Shot was again threatened with apoplexy. But before he could explode, Ratoni spoke.

"I'm Jerry Ratoni. Ever hear of me?"

The Big Shot looked at his bodyguards. They shook their heads in unison. Then he answered: "No. Who is Jerry Ratoni?"

That must have been an awful blow to Jerry's vanity; but he stood it like a man. He studied a bit; then: "Call in that flunky. He seemed to have a brain or two."

Obviously to humor Jerry as a lunatic is humored, the butler was summoned.

"James," the Big Shot asked, "Did you ever hear of Jerry Ratoni?"

"Ratoni?" the cadaverous looking butler shook his head. "Why—er—I don't recall that name, sir; one of your friends, sir?"

"Naw," the Big Shot was getting bored now. "This buzzard here thought you'd know who he was."

"This gentleman's name is Ratoni, sir?" James searched his mind. "Come to think of it, sir, there was an—er—gentleman of the same name who lived in the last century. "My heart sank as he spoke, although I had half guessed our predicament, so utterly illogical in theory yet so logical in fact—unless I had been dreaming for the past several hours. James continued. "He was something of an—er—notorious figure, sir, a sort of 'Big Shot' in a small way, if I may be so bold as to say so, sir."

● I caught Alice's hand as the enormity of our situation came home to me. Had we been stranded on a desert island we could not have felt more alone, helpless. By some whimsy of fate, we had been caught up in time's maelstrom, opened by the explosion in the Zenith building, whirled willy-nilly through time and space; and

*Wakefield's description is unfair to the reader. It is a first impression, bewildered and overdrawn. The "shimmering threads of steel" were sturdy suspended roads, over which passed both pedestrians and machines. The huge "balls of glass" he might have described in terms of the "trolley car" of his day and the picture would have been less fantastic. Nor were the gyrocars less safe than the absurd traffic-blocking trolley of an earlier day.

dropped in an alien century, if not in an alien world.*

Ratoni's hand trembled as he lighted another cigarette but his voice went on smoothly. He had not been too greatly surprised. Like myself, he had guessed at the truth.

"Another question, James. What year is this?"

"Year? Why—2042, of course, sir. What year should it be, sir?" The fellow was more perplexed than we.

"That's right, James." Ratoni turned back toward the Big Shot. The man on the dais spoke first.

"I do recall now a fellow named Ratoni way back there," he said, "But what's that got to do with you?"

"I'm that fellow."

The big fellow was no longer amused. He waved his hand toward the door, at the same time relieving himself of a cavernous yawn. "See you again sometime," he said. We were dismissed. I turned and started to go, Alice still clinging to my hand. But Ratoni was not ready to go.

"Just a minute, you fat mullet! I've got things to say to you!" His hands flew to his armpits and came back with an automatic pistol in each fist. "Maybe you birds don't know what these are, but if you want to find out one of you move so much as a finger!" If the men did not understand his weapons they could not mistake the menace in his voice, and all three, all traces of lethargy gone, sat motionless.

"Now let's get this straight. As I told you I'm Jerry Ratoni. As James told you, I lived back in the last century. To be exact, I was born in the year 1907. That would make me about 135 years old. And I was something of a big shot back in those days. Not used to being laughed at, nor told when I can come and go. Get me?"

The fat fellow nodded.

"Now the way I get things, the Big Shot now means about the same as the Big Shot then. Now pull in your ears and listen to this. I'm not trying to pull a fast one on you; and I'm not trying to muscle in on any of your rackets. But I've got something you want, and you've got something I want, and I want to make you a proposition. I thought when I started here to see you there wouldn't be any trouble about talking to you; but our introduction wasn't very favorable. Otherwise I wouldn't have flashed these rods. To prove I'm shooting square, do this: Call the dicks and tell them to bring Jerry Ratoni's fingerprints up here. You can soon find out from 'em whether I'm lying."

The Big Shot blustered and scowled, but Ratoni kept his guns trained on the trio; and finally he buzzed the police, who, after a little argument, consented to dig Ratoni's prints out of their musty files.

Ratoni was exultant.

"It's a pipe, Vann!" he whispered, as we waited for the police. "They're soft—soft! See how easy I bluffed 'em? I half suspected what had happened to us from what I could get out of that nut who pulled us out of the Lake; but most of it was guesswork—and bluff. And how it worked! Oh, how it worked!"

"What's the lay?" I asked.

He grinned knowingly. "Wait and see, big boy, wait and see. All you and Alice have to do is back me up. We'll make this big shot look like a small potato."

Finally the police arrived, trailing into the reception room after the cadaverous James. They stood at attention before the Big Shot, and saluted him stiffly.

"They call these guys police," Ratoni observed, "but they act more like the Big Shot's private fingers."

"Oscar," the Big Shot addressed one of the three, whose great horn-rimmed glasses gave him an owlish appearance, "this bird over here says he's Jerry Ratoni, rose from the dead. He's a nut, of course, but we decided to give him a show. You got Ratoni's monikers?"

The spectacled one nodded.

"Well, give him the works."

Ratoni spoke no word during the ordeal of the finger print recording. The bespectacled one took every print with minute care; and when he was finished took from a brief case the familiar records of the Chicago police department, now a bit musty. I saw him start as he examined and compared the prints; then he bent carefully over the twin records, spread out on a table before him, ejaculating and muttering to himself as he scribbled and examined. At last he straightened up, glanced surreptitiously at Ratoni, and made his report.

"The prints, sir," he said, "correspond in every particular."

"You damned fool!" the Big Shot roared. "That's impossible! Ratoni's been dead a hundred years!" The bespectacled one held his ground. "I know nothing about that, sir. The fingerprints never lie. See for yourself." He carried the records to the dais, and the Big Shot studied them carefully under the magnifying glass. He was half convinced. He studied the record which accompanied the prints, then shot at Ratoni: "You still have a scar on your left shoulder?"

For answer Jerry pulled back his shirt to reveal a jagged, livid bullet mark. Then he asked:

"Now do you want to hear my proposition?"

The Big Shot gestured his assent, and the police departed, with a warning not to mention the fingerprints to any living soul.

Never more forcibly had Ratoni shown why he reached prominence in his chosen walk of life. He told his story so convincingly that I caught myself wondering if it were not true. At least it was as plausible as our actual experience.

"Try to get this through your head, Big Shot. You've got millions of dollars, power, everything that money can buy. In my head I've got something your money can't buy—but it has a price. That something is the secret that will show you how to live as long as I have lived!"

He paused impressively, then continued with his fantastically simple story, in which I took a leading part. I was a young chemist, Ratoni said, whom he had employed in his distillery, and in my experiments I stumbled on to a chemical combination which would arrest the process

*Wakefield's manuscript no doubt will add fresh fuel to the fire of controversy which has raged for centuries over whether time travel, i.e., literal transportation from one century to another without the normal body deterioration which marks the passing of time, is possible.

Generally speaking, there are two schools of thought which believe in the theoretical possibility of traveling through time—those who regard time as another dimension to add to those with which we are familiar and those who picture time as an endlessly flowing stream. Both schools have elaborate proofs of the soundness of their respective theories, too well known to repeat here. Regardless of their correctness, or incorrectness, there is no known record of bona fide time traveling into the past, and if any of our present day experimentalists have penetrated the future they have not returned to tell about it. Wakefield's story we must take on trust.

of decay* in the body cells, staving off death indefinitely except through accident.

We three, Ratoni said, had tried the formula together, after satisfying ourselves of its potency. For nearly a century now, we had traveled in many countries seeing strange people and customs. At last we tired of traveling and turned back to Chicago, our home. Unfortunately, we met with an accident over Lake Michigan, making our introduction unimpressive, and to gain the audience we desired with the Big Shot it had been necessary to become somewhat abrupt.

Now, Ratoni proposed, if the Big Shot would cede a half-interest in his interests, together they would rule the world, with life everlasting. It was as subtle a mixture of cajolery, flattery and persuasiveness as I have ever seen. And the Big Shot, despite his better judgment, was more than half convinced.

"How do you make this chemical?" he shot at me. Ratoni interrupted as I stuttered.

"Not so fast, my friend, not so fast. I came to you because you're the man who has something I want; but that don't mean I'm going to hand you something on a silver platter. We'll fix up the pills. You have to take 'em once a week, and you can't afford to miss any of the weeks. We'll make just four a week, and all take 'em together. Then there'll be no double crossing."

During this speech, the Big Shot's apoplexy threatened again, but he calmed down as one of his henchmen whispered into his ear. I saw him stealthily reach to a button on a table near his chair. Ratoni's watchful eye caught the same motion.

"I forgot to tell you, fellow," he added, "that whatever you do don't try to squeeze us. Because we don't squeeze, see? And if you start anything like that the whole deal's off. We thought it would be a kick to team up with you; we thought you'd have the brains to see the possibilities. But if squeezing's a part of your layout, it's no go, and we might as well stop now." His voice was dangerous and carried conviction. My heart beat a tattoo as I waited for the big fellow's reaction; and again Ratoni won. Hatred in his eyes, the Big Shot called off the evident project of torturing our secret out of us; and asked for the night to think it over.

CHAPTER IV

"It is the End"

● We found food awaiting us in rooms within the apartment, to which James showed us, and ate ravenously. We had not realized we were so hungry—and tired. I was much too sleepy to note more than casually the luxuriousness of my bedroom.

I was awakened by a soft light streaming through the very walls of the bedroom. I gazed in astonishment for a moment before I realized where we were; then I examined the walls and found they were made of glass,† which was not transparent but allowed a mellow glow to shine through. The bath gleamed invitingly through an adjoining door, and in a jiffy I was beneath a cool shower, the water of which crackled as it struck my skin and left me tingling and glowing. It evidently was electrically treated.

My clothes were missing, but in their place were garments such as the Big Shot wore, silky and soft, quite in contrast to the rough woolens in my suit. They were a bit embarrassing to my 20th century modesty* but at least were comfortable.

Feeling quite undressed, I stepped out into the outer chamber. Alice and Ratoni were already there, seated at a table laid out in gleaming silver and snowy linens.

"Good morning, Mr. Wakefield," Alice smiled at me. But her smile turned to a blush as my eyes fell on her attire—virtually like my own except for the purely feminine frills and furbelows.

"They are all I could find," she said defensively, "and you know the saying—when in Rome, do as the Romans!"

I hastened to explain. "I wasn't criticizing, I was marveling!" Ratoni grunted and bit down on his toast. At that moment the Big Shot himself came in and sat down at the breakfast table.

"Well, Ratoni," he said, "it's early in the day to talk business, but I thought about your proposition last night, and to make it short, I've decided to take you up."

He stuck out a pudgy hand, and there was the beginning of the most diabolical plan ever conceived in one man's brain.

Later Ratoni gloating told me of his plans. The pills, supposedly containing eternal life, would hide slow death. Ratoni merely played for time. He first must learn the ramifications of the Big Shot's vast enterprises, after which the Big Shot would be excess baggage. Ratoni then would be the Big Shot, and he proposed that I be his first lieutenant.

"You see," he explained after a few days of investigating, "these birds have had things their own way too long. The Big Shot himself didn't have to work to get where he is. He sort of inherited it. He's fresh meat. I believe I could have taken him from a standing start. And with this eternal life stuff I cooked up, it's like taking candy from a baby."

Already we had gone through one farcical ritual of taking the Life Pills, and the Big Shot, so eager was he for life everlasting, declared he already was feeling the good effects, although assured by Ratoni that it would be several days, maybe weeks, before the effects would be noticeable.

"What are his rackets?" I queried. "Liquor and gambling?"

"Oh, sure," Ratoni gave a deprecating shrug, "He's got those—everything I had and then some. You've got to hand it to these babies for one thing. They had imagination.

"I sort of dabbled in politics, you remember, and was making a pretty good thing of it. Well the boys who followed me went on from there. They got to where they elected practically all the public officials. Got a finger

*Down through the centuries, man has sought fruitlessly for eternal life—rather, eternal youth. Pseudo-medical cliques, even religions, have been founded on this search for a short cut to eternity. It is not surprising that the Big Shot "fell" for Ratoni's story, he had many distinguished men as precedent. At that time, too, his life expectancy did not exceed 70 years as compared with our 150.

†Use of glass which was not penetrated by the burning actinic rays in the construction of houses was first being recognized when Wakefield lived in the 20th century.

*"Modesty" in the sense Wakefield here uses it refers to a sense of shame at displaying the body, prevalent in his time. Curiously enough it was not immodest to appear at public baths practically nude but such a costume on the streets would have brought out the police. Man was even more 'modest' than woman. He was literally wrapped in clothes which left only his hands and his face bare, regardless of temperature.

in the state treasuries, a cut on all the big construction jobs. This was better even than the old protection racket, for there was no need to throw pineapples* about.

"Along about twenty-five years ago, the leader of the Chicago gang—which, the way I get it, has always held the reins—got so much money he didn't know what to do with it, and started investing it in public utilities, the power companies. This was too slow. The Big Shot—his name was Joe Gabraldi—owned the governors of about eight of the eastern and middlewestern states. Between them, they figured up a painless process. They lifted the franchises of the power companies, and restored 'em for a price. The price was a cut-in. Before anybody knew what was happening, Gabraldi practically owned 'em all. Every time you turned on the electric lights you slid a nickel into his war chest.

"The fat boy succeeded Gabraldi, and all he's done is elaborate what Gabraldi started. Now he's got a hand in the national banking chain; the big railroads; an airline from New York to London; and the radio companies, to mention a few. Man, I thought I was doing things in a big way; but they put me in the shade."†

● Alice and I were hopeless pawns in this diabolic game, friendless and helpless. Ratoni soon found the mechanical stenographers much more efficient than Alice for most of his needs, and he had little need of my services at first; so we spent most of our time wandering about the huge city, marveling at its wonders.

We never tired of seeing them: The moving streets predicted a century and a half before by a great fiction writer and philosopher;‡ the noiseless boats, heliocopters, and cars of all descriptions, propelled by electricity by virtue of a perfected battery; the houses and buildings built of glass which let in the health-giving rays of the sun; the great air-liners, arriving and leaving on their transcontinental tripe six times a day, carrying tons of freight and scores of passengers; the myriad sturdy little helicopters, which deposited workers gently on the landing stages provided on the roof of every large building. On the surface, the city appeared a modernized version of what it had been in our day—grown vaster and less noisy, but otherwise outwardly about the same.

More than all else, we loved to wander at night—watching the myriads of boats, like aimless glowworms, darting about the lake; the airships buzzing along airlanes laid out for them by giant searchlights; the hordes of people traveling along the moving streets, stepping off in the gayly-lighted saloons and cafes, or gazing longingly into the sparkling show windows.

And these nocturnal excursions brought us a knowledge that Ratoni did not have—probably would not believe. There was a rumbling undercurrent of revolt among those who had been transformed into virtual office slaves and day laborers. It was not so much resentment at their work, for generations of such work had accustomed them to it, made it a part of daily routine; but it was resentment against high taxes; against police openly owned by the gangster chieftain; against rule, in short, by a despot. The people were muttering.

We saw pitiful cases of poverty too frequently to be an abnormal condition. We saw indignation meetings broken up by the police as quickly as they were discovered. One night we stopped to listen to a soap box orator, a golden haired lad who had selected one of the two lions in front of the Art Institute for his pedestal. Alice and I looked upon these lions as our friends; they recalled to us the Chicago we had known. Some sentimental soul, whom we blessed, had arranged to retain the lions when the Institute was lifted thirty stories into the air.

There were, perhaps, a hundred people listening when we first saw the speaker from afar, and the crowd was growing rapidly. It was a humid night and many people were along the avenue, seeking a breath of air.

The boy was a natural orator, and a champion of the underdog. The audience was with him as he poured forth a tirade upon the heads of police, figurehead officials, and the Big Shot.

"Who raises our taxes?" he shouted as we came up.

"The Big Shot!" a few scattered voices answered from the crowd, along with the admonition to "pour it on 'em!"

"Who lowers our wages?"

"The Big Shot!" A score or more had taken up the refrain.

"Who steals our sweethearts?"*

There was a rumble of anger in the crowd. "The Big Shot!" the answer boomed back at him. A woman near us began to weep hysterically.

"Who makes our lives a living hell?"

The crowd thundered its reply. "The Big Shot!" At that moment, the sirens of a police car bore down the avenue, and the youth shouted in a powerful voice that carried above the roar of his now aroused audience:

"Who carries out the Big Shot's orders?"

The answer came back in a wave of sound: "The Police!" Before the echo died away, the blunt nose of the armored police car spat forth a blue flame that buried itself in the throat of the orator. The thin blue streak hung there for an instant after the boy fell, hands clutching at his throat; then died away as the lifeless body rolled down the broad steps of the Institute.

"Notices have been posted and broadcast," came a monotonous metallic voice from the loud speaker in the heart of the car, "that no more demonstrations would be allowed. The people may have supervised meetings at any time in the public halls. Let this be an example to other extemporaneous orators . . . Now go to your homes and to the public dormitories."

● The car nosed up to the body, and two men opened the steel door, stepping out to pick up the lifeless form.

*Underworld term for explosives, especially the more common bomb.

†Ratoni's description was not exaggerated. Power begat power in those days. The corruption of politics alone put enormous sums of money into their "war chests." consider the fact that in 1930-40, more than thirteen billion dollars annually or a fifth of the total income of all the people in the United States, passed through the hands of public officials in public expenditures. At that time gang control was in its infancy. Public expenditures grew steadily throughout the century until it was estimated in the middle of the 21st century one-half of every wage earner's income went to taxes. Of course these were not direct taxes, the more popular form being the tax on natural resources or products, such as the tax on cigarettes, but in any event, the tax was passed on to the consumer. For the enlightenment of the casual reader, the value of the dollar was roughly equivalent to a half day's manual labor, the exact value depending upon the current purchasing power of the dollar, which was not stable.

‡H. G. Wells, whose earlier writings were imaginative excursions into the future. These works were then considered imagination of the highest order; today we regard Wells as a logician. He did not predict; he reasoned.

*Believed a reference to the commerce in unmoral and immoral women carried on by the criminal element. Many women were forced into this commerce, by actual want or kidnaping. It was an international trade investigated extensively by that once powerful international body on arbitration, the League of Nations.

As they stooped, a strangely familiar voice, a woman's screamed a challenge.

"Cowards," the voice shrieked. "Fools! Cowards! Don't let them take that boy! He's yours! Tear their filthy hands off his body!" The startled officers looked up. The crowd surged restlessly about the car. And I, unbelieving, horrified yet elated beyond measure, grasped the arm of the girl who stood beside me; for the voice was the voice of Alice.

She shook off my restraining hand and climbed to the lion's pedestal. A fanatical light gleamed in her eyes as she pointed a shaking hand at the police car and its occupants.

"Cowards! Will you stand by and see your brother murdered without lifting a finger? He was one of you! He was pleading for your rights—he died for you—and there you stand, unprotesting. Is there any manhood left in your hearts? Or do your souls, as well as your bodies, belong to the Big Shot?"

One of the officers, recovered from his first surprise, carefully levelled a ray pistol at the slender figure. As the blue flame leaped across the short space, Alice fell into my arms; and as she fell, the crowd struck.

Those hapless officers, taken off their guard, were victims of the pent-up fury and hatred of the mob, which rolled over them in an irresistible wave. Literally with bare hands the mob tore the death car into a thousand fragments; and rolled down the avenue, gathering strength as it moved.

Up and down the street police sirens were screaming. The angry buzzing of helicopters came from above, the night patrol coming to investigate. Ahead of me, the mob; behind me, the locked doors of the Institute. I was trapped, Alice in my arms.

My first concern was with her. Gently I laid her on the broad steps and bent to hear if her heart was beating.

"I believe she has only fainted," came a voice from behind me. Whirling, I saw the mad inventor, Kriml, he who had picked us out of the lake.

He chuckled grimly as I gasped his name. "I was watching," he explained. "She fainted just as the fellow aimed. The blue flame did not touch her. Otherwise . . ." He shrugged expressively, then added: "Young man, you and the yellow-headed one have a penchant for trouble. First I pull you out of the lake; then I save you after you've incited a mob to riot. Next thing, you'll have police on my trail, and that would be sad; deplorable."

I stuttered my thanks for his proferred aid and gathered Alice in my arms, ready to follow him. "A moment," he said. He stepped down into the street where lay the body of the officer who had aimed at Alice, the gun still in his hand. This Kriml pried from the stiff fingers, then hurried back up the steps. "Let's go!" he flung Alice over his shoulder, stepping to a broad window which was open. He helped me with the inert form of Alice, then carefully closed and locked the window.

Through the dense blackness Kriml strode as one who knows his way, and I followed close at his heels. An automatic lift carried us to the top of the building. There we paused and looked down upon the street.

All the moving ways on the avenue had been stopped and traffic blocked. The mob had moved a bare two hundred yards; and before it sat a solid row of the armored police cars, their blunt, blue-black snouts glinting evilly.

"The police worked fast tonight," Kriml muttered. "They've been expecting this."

A phalanx of helicopters, in the familiar blue of the police, was surging down from behind. As those in the rear of the mob saw them they pressed forward; and as the mob moved, the weapons of the police cars spoke their blue message of death.

A solid sheet of blue flame leaped from the line, sizzling and crackling, mowing down the front ranks as a scythe mows wheat. Those behind, pressed by the helios, pushed forward to their death, until the bodies made a barricade through which the blue ray could not penetrate. Then the mob broke and ran.

The helicopters, hitherto watchful onlookers, swung into action. Pencils of light picked out fleeing figures; and along these thin white beams swept the blue death, inexorable, ruthless. My horror-filled mind reeled and I turned away, thankful that Alice could not see the carnage.

"The end," Kriml breathed beside me. "This is the end."

"What do you mean?" I asked.

"The end—for Chicago." He set off across the roof. "Come. My helio is about a mile from here." I followed, trying to fathom the cryptic meaning in his words.

CHAPTER V

Twenty-four Hours

● Across bridges and over roof-tops I followed Crazy Kriml's erratic trail. In ten minutes we were in his helio and there I administered first aid from a kit he carried while Kriml guided the flyer out over Lake Michigan. We were accosted once by a blue patrol, but passed when Crazy Kriml gave them his name.

Alice opened her eyes after an interminable period. "What happened? Where are we?" she asked.

"You're not to talk," I replied. "You fainted. We are with Crazy Kriml again, out over the lake."

"But I am all right," she protested. "It was silly of me to faint." She was silent for a moment, then added: "I suppose you will report to Ratoni?"

"I shall not," I retorted, "but I don't understand why you did it."

"Because that boy . . . he looked like my brother." Her tone was hushed and her eyes filled with tears. Then she became defiant. "Tell him if you like, but I can pretend no longer! One of Ratoni's followers killed my brother. Shot him down coldbloodedly, as the police shot that boy tonight. He was killed because he refused to pay tribute to the gangsters. For four years I worked for Ratoni, seeking to learn that killer's name. I meant to first kill him, then, if I could, Ratoni. I thought I was on the right track when . . . the Zenith fell. Now you know—and you're his man. Do what you please with me."

Her confession was inspired by despair. My answer was to sweep her into my arms. "Alice," I cried, "Alice! But I'm not Ratoni's man!" With a jubilant heart I told her of the role I, too, had been playing.

Here I must confess that when we alighted from the flyer our actions were such that Kriml muttered:

"Great Jupiter! Because I saved their lives twice they think I'm cupid!"

Crazy Kriml's refuge was a tiny cabin, on a wooded shore of the lake. Inside the cabin, he turned on me.

"Crazy Kriml, sometimes, gets as curious as other folk. Now I've heard that wild yarn you and Ratoni put over on the Big Shot, as has every one else in Chicago and the whole country, for that matter. But as one to whom you are deeply in debt, I'd like the truth, the whole truth and nothing but the truth." There was nothing insane about his kindly eyes, and I desperately needed someone to advise me; so I told him the whole story.

When I had finished, he sat for some moments in silence; then, "H'mm," he said. "Very implausible though barely possible. However, the evidence, such as it is, bears you out; and there has to be some set of facts to account for you. At least the story's better than that wild yarn you told the Big Shot.

"The Council of 46 . . . So men have tried before. Pshaw! They were not so well equipped as I . . ."

I recalled his comment as we strode from the mob carnage, and connected it with what he said now. "What do you mean?" I asked. "You're well equipped . . . for what?"

He rose and strode restlessly up and down the room, finally pausing before me.

"Young man," he glared at me, "you say that you were a member of a secret band pledged to wipe out the gangsters. I believe your weird story . . . and I'm going to make you a member of another secret organization, pledged to the same high purpose . . . of which I am leader. You will have no duties, because the duties have all been assigned. The membership in this order, which has no name, is small.

"They call me Crazy Kriml, and on one subject I am crazy. I, like your yellow-headed one, have a grudge. I have harbored it longer than she. Never mind what it is. But your yellow-headed one has resolved me upon the course from which I shrunk. Tonight, as I stood on the roof of the Art Institute and watched the lives of my fellowmen snuffed out because they dared to express their resentment at the rule of a criminal, I decided there is only one way to destroy the gangster of America, and that is to destroy the city which harbors him.

"Chicago shall be first to go. If the gangster still thrives, others will follow. No, I do not expect you to believe me, now. But soon I shall give proof. This is your only part in my secret order: Go back to Ratoni with your Alice. And when Crazy Kriml gives the word to evacuate Chicago, take her and go.

"Now to bed. I have work to do tonight. You two must sleep." He was through as abruptly as he had begun, and stalked off to the next room, in which he had fitted up a laboratory. Hours later I heard him muttering to himself; and when he awoke next morning, he was gone, his helio with him.

Assuming he would return for us when he had finished his mission, we prepared breakfast from the stores in his cupboard and were eating when we heard the whirr of helio wings outside. Alice looked out the window.

"Vann!" she cried, "It's the police!"

"What of it?" I rejoined, and continued with my breakfast. The door opened, three police officers entered, and, to my surprise, their ray guns were in their hands.

"Hey," I shouted, "what's the idea of busting in without knocking? And what's the idea of the artillery?"

"You are under arrest," was the curt response. "Where is Kriml?"

Intuition told me to shield the eccentric old fellow. "Flew to Canada, early this morning," I said. "Planned to be gone two weeks. Left his boat for us to return to town. But what have we done?"

"Ask the Big Shot," was the reply, and that was all I could get out of them. It was useless to resist; anyway, I could not but believe a mistake had been made. Probably Ratoni had sent them to look for us—but if that were so how did they know we were at Kriml's cabin?

We followed the now familiar route to the Commonwealth Building, atop which was the penthouse of the Big Shot. As on our first visit, James met us at the door, and we walked through the grotesque outer rooms to the reception hall of the Big Shot. But as we stepped across the threshold, we stopped, our mouths agape.

For the familiar figure of the Big Shot was not there. Lolling in his chair, the bodyguards at either side, was Jerry Ratoni.

● "Ratoni!" I gasped. "Where's the Big Shot?"

"I am the Big Shot," he replied laconically. "The fat boy got his wish for eternal life last night—while you were gallivanting around the country with Kriml."

His lips twisted into an ugly snarl and his voice hardened as he went on. "You ought to know, Wakefield, that the walls have ears in this man's city. And the walls told me a-plenty, last night. All about the Council of 46, and the nutty scheme to destroy Chicago . . . And I also found out who was the yellow-haired woman who led that mob to riot last night. That was quite a big night." He gloated over us, then remembering, asked: "Where's Kriml?"

I repeated the story I had told the police. Ratoni swore, then jerked on the vuefone to confirm my story. "Those damned fools!" he shouted at the abashed officer, "Don't they know Kriml didn't plan to stay away? Get 'em back over to that cabin, with orders to wait there till he comes back. Hear me?" He snapped off the instrument then turned back on us.

"As for you two double-crossers, I'll hold you 'till we get our hands on Kriml. He seems to have taken a shine to you. Maybe you'd be pretty good hostages. After that . . . well, they tell me they got some funny schemes here, like a hot plate that warms your toes, then bakes and fries you, all at once." He turned to Alice. "So you planned to knock me off, eh? Well, I've just about made up my mind to add you to the Big Shot's private harem for a while . . . But first we'll find Kriml. Of course he can't do any damage, but as you know, Ratoni never passes up a bet!"

Handcuffed and guarded, we were shoved into the elevator and dropped to the basement, a veritable prison. There we were placed in cells, a narrow corridor separating us. Some comfort we found in the fact that we could talk, and see each other. Days passed, weeks. How many I do not know.. Then one morning I awoke, went to the barred door, and looked across the corridor to find Alice was gone.

I was frantic. I screamed and shook the bars of the door. I paced the cell and tore at the walls until my fingers bled. Finding this futile, I calmed myself and as best I could laid a plan. When the pottering old man who served us brought my food, I would attack him, kill him if necessary, take his uniform, get out and in some

way get to Ratoni. But instead of the old fellow came three officers. They handcuffed me securely, and in a few moments I stood again before Ratoni, the Big Shot.

"You've got a chance for your life," he rasped. "Read these."

There were two typewritten letters.

"Ratoni," the first began, "Crazy Kriml sends you a message—and a warning.

"The message is this: Take your cohorts and leave Chicago.

"And the warning is this: Let no one enter your office building Monday morning.

Crazy Kriml."

That letter was dated Saturday. The second was dated Tuesday. Like the first, it began:

"Ratoni, Crazy Kriml sends you a message—and a warning.

"It is the second, and last, warning. You did not heed my first. You alone are responsible for what happened to your employes.

"Friday the destruction of Chicago begins. It begins with the Commonwealth building. Your penthouse will crash first. It begins at 2 o'clock.

"On one condition will I hold my hand. That is, that you take your followers and leave Chicago, leave America. If you wish to save the city, raise a white flag over the Commonwealth building. I will stay destruction until you leave, if you leave by noon Thursday, with all your followers, your police and your henchmen.

"If you fail to accept these terms, upon your soul rests the sin of the destruction of Chicago. And wherever you go, Kriml will follow you."

I looked up at the gangster. His face was pale with rage and fear. "Now listen!" He switched on the vuefone. No picture appeared, but a voice came from the speaker, a monotonous droning voice.

"This is Crazy Kriml. Chicago is doomed. You who wish to live must leave. All others will die. Friday at 2 o'clock I begin. You saw Ratoni's office fall. My message is to cities all over the world. Don't let Ratoni enter. Drive out your gangsters. I follow Ratoni. Where he stops, I destroy. Chicago goes first, because Ratoni would not leave." Over and over came the same words, with slight variation and short pauses.

"Since Monday the voice has been going like that!" Ratoni's voice was raw and sweat stood out on his forehead. I gloated inwardly.

"Why don't you, the Big Shot, stop him?"

"Stop him hell, we can't even find him. Besides," he grinned evilly at me, "I've saved that little job for you!"

"For me?" I laughed. "Why I don't even know where he is."

"Well ain't that too bad! Because the Commonwealth building is first on the nut's list, so he says; and at 2 o'clock tomorrow afternoon, your girl friend will be the only living person in the Commonwealth building!"

I was stupefied. "You're joking. You wouldn't do that!"

"Oh, wouldn't I! Let's go see." He led me, my guards close behind, to the suite we used our first night in the new Chicago, and opened the door to the room which Alice had occupied. She lay on the bed. Not only was she sleeping, or unconscious, but her hands and feet were tied to the bedposts.

● Shackled as I was, I turned on Ratoni, intent on beating that black leer into his ugly face. I lunged at him futilely as my guards caught my arms.

"I should have told you, too, that she had just enough powders to make her sleep until about noon tomorrow, when I'll bid her good-bye—unless I've heard from you before then. The next couple of hours she can lay there wondering what it's all about. She'll finally find out, unless her brave boy friend comes through with the goods."

He turned to my guards. "Put him in his helio, boys, and turn him loose."

They jerked me out on the roof where a helio was parked, and took off my chains, keeping their guns trained on me the while. I was warned I would be shot if I were seen near the building, and then told to get going. I had no choice in the matter. Swinging the flyer off the roof, I started aimlessly on a search which seemed foredoomed to failure—to find one man in a city of seven million, one man who could save Alice from a horrible death.

Bewildered, without aim or plan, I hung there in mid-air for a moment, looking longingly back at the Commonwealth Building, in which Alice lay sleeping, and in which she would go to her death in just 24 hours if I could not find Crazy Kriml. The impulse to turn back, to storm the stronghold of Ratoni single-handed, flashed through my mind; but the still guards, their eyes fixed on my motionless heliocopter, warned me that course would be certain death.

Glancing down I saw a huge crowd all around the Commonwealth Building. I swooped nearer and saw the mob was held back by the dangerous blue-black police cars, in a solid circle around the lower floor. For a moment I wondered, then recalled Kriml's droning voice: "... That was a warning. Ratoni did not heed it ... Now Chicago is doomed." The mob had gathered courage to wreak vengeance upon Ratoni, but lacked the courage to fight against the deadly blue flame.

I rose high into the air. Airships of every description dotted the sky. Either they were settling on the buildings, or headed south and west. The exodus from Chicago was on. Long lines of craft, as far as the eye could follow, streaked down the sky. In this conglomerate crew I was surprised to see planes of an ancient vintage, reminiscent of my own day, their antiquated engines wheezing at every turn of the propeller.

Lake Michigan lay ahead. Far across the lake sat a little cabin, a cabin which held happy memories. I turned my ship toward that wooded shore, with little hope of success, but unable to conceive another starting point for my mad search. Precious hours of the few allotted me were spent seeking out that isolated spot. I found the cabin wrecked, turned upside down. Papers lay scattered on the floor. Through these I turned, in the hope of finding some clew that would give me a lead to follow. There was nothing. Heartsick I finally turned away, and headed my helio toward the lakeside city.

It was dusk when once more I flew over Chicago. The airways were not lighted tonight. It would be dangerous to stay up, as well as useless. I dropped to the nearest roof landing and made my way to the streets.

The Loop district was a solid mass of humanity. Traffic was virtually at a standstill. The moving ways had stopped. And everywhere were people: cars and vehicles loaded with household furnishings of every description;

squalling children led or carried by harassed parents; cursing men fighting to get through the jammed traffic; blaring horns which angry drivers sounded in vain. I even saw one spavined, frightened horse, ludicrous anachronism, completely hemmed in by horseless carriages.

But better pens than mine have described that awful exodus. My thoughts and my eyes were elsewhere than on the pathos, tragedy and humor of that babel of confusion. My job was to find Kriml. I walked the streets of Chicago, peering into faces that looked suspiciously back at me, fighting through the crowds for a better sight as a chance resemblance sent hope surging through me. I do not know what sustained me through that night. Much of it I cannot remember. I believe I must have been delirious. The first rays of morning found me slumped upon broad white steps on Michigan avenue, duly watching the stream of people that still poured past.

Those broad white steps—down which a youthful body had rolled. I sprang up, spun around, and shouted with joy. I stood before the Art Institute—and there was one hope left, one door yet unopened. The window through which we had crawled that wild night was not open as it had been, but one kick and I sprang through the shattered glass, into the still dark interior.

Was it possible that I could pick my way through this maze of roofs and bridges to the place where Kriml kept his helio parked? I do not believe I could repeat the feat today, were it possible to try; I did it that morning by sheer instinct. Often I closed my eyes, the better to recapture the sense of the direction we followed that dark night. Then, with Alice in my arms, it had taken us fifteen minutes. This breathless, harrowing morning, two long hours were wasted in carefully searching, tracing and retracing my steps. At last, as I nearly despaired, a gleam of metal caught my eye. There, nestled into a corner near the edge of the roof, was Kriml's slate-gray heliocopter, blending almost perfectly with the color of the roof.

CHAPTER VI

Ready for Destruction

● With a hoarse shout of joy, I raced toward the helio.

Midway I checked abrupty, dropped precipitately to the roof. Perhaps the instinct that led me to the ship also warned me of danger; perhaps my hearing had been made acute by mental and physical anguish. And as I fell, a thin blue flame of the police guns shot through the space above me.

"Wait!" I shouted, "It's Wakefield!"

"By the great . . . . Don't tell me," came the familiar voice of Kriml, "that your life needs saving again!"

I certainly didn't feel humorous, but I could not forbear a chuckle. "Something like that," I said, struggling to my feet. Kriml, who had fired at me with the police gun he appropriated the night of the riot, hastened out of the roof-house to aid me. "Hurry," he urged, "we may be seen from above."

A cup of black coffee did much to revive me, and between gulps I told the aged inventor my purpose in seeking him out, and how I had found him.

"You mean," he commented, frowning, "that Ratoni counts on me giving up my plans in order to save the yellow-headed one?"

I nodded.

"No," he said emphatically. "That is out of the question. No. They have been warned—sufficiently. If Ratoni chooses to add one more life to the number for which he must account, that is his choice. My choice has been made. I cannot be changed."

He shook his head, as if to dispel unpleasant thoughts. "But enough of that. Would you care to see the weapon which destroyed the Big Shot's office building, and which will destroy Chicago?"

In a corner was a small cabinet, its face covered with knobs.

"This is a small model," he said, apologetically, "the first I constructed. It hardly resembles the others. It will give you an idea." To my wholly unscientific eye, the cabinet appeared remotely like a radio cabinet of my own day. Its interior was a hodge-podge of tubes, with a motor nestling at one end, and hundreds of intricate wires leading out and in among them. At one side, projecting outward in a right angle, was a bellowing glass tube, about the diameter of a half dollar where it left the cabinet and terminating in a long smooth bore about the size and shape of a soda straw.

"The tubes on the larger models," Kriml continued, "are much larger. I have also equipped them with an ultra-efficient condenser which more than trebles their power." He turned a switch. "Don't stand before the tube," he warned.

In the tube a soft glow appeared, of creamy whiteness. This dulled to a deep purple, then to a smoky gray which seemed to remain constant, and which shot out of the end of the tube about four inches, then evaporated into the air.

On a nearby table were fragments of masonry, glass and stone. "Watch," Kriml muttered, and with talons of hard rubber picked up a small piece of glass. This he bathed in the smoky emanation for the space of ten seconds, then threw off the switch.

"Disappointed?" Kriml noted my doubtful mien, and extended the piece of glass. "Look this over."

I took it gingerly in the palm of my hand. It appeared unchanged. But as I fingered it dubiously, the seemingly solid fragment crumbled into crystalline bits. I dropped them as if stung.

"A shock, eh?" the old man laughed. "Well, I confess it was somewhat of a shock to me, too, the first time."

"But what is it?"

"Radio," he hesitated, then added, "At least, it's comparable to radio. Strictly speaking its one of the rays. Which one, I don't know. But consider that this machine is a minature broadcasting plant, broadcasting, instead of the radio wave, a wave capable of breaking down the structure of material substances. And you get the idea."*

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*This portion of Wakefield's manuscript discloses two remarkable facts: First the ignorance of the laymen on what we consider the elementals of science, and secondly, the haphazard hit-and-miss methods of experimentalists. They worked from result to cause first inducing the result, more often than not by chance, through the trial and error method, and working backward to determine the cause.

To illustrate the first point, Wakefield probably used the telephone every day, as secretary to Col. Randolph, yet it is doubtful whether he could have explained the theory of the instrument he would have been completely baffled had he been asked to reconstruct the instrument from raw materials.

Any one of a half dozen rays utilized at this time might have been used by Kriml in his projector. It probably was one in the

"I have my theories," he added ruefully, "but I have proved none of them. You and your yellow-headed one decided me upon trying the results with the cause still undetermined.

"You recall I picked up one of the blue-ray guns the night of the riot? It was curiosity that led me to risk those few seconds longer, the same curiosity that started me on these experiments. I wanted to see what made the ray-gun work. It was impossible to obtain one of the guns. The secret is the closely guarded secret of the police, a secret that has had much to do with the gangster's supremacy.

"The blue beam gun utilizes, I believe, the alpha ray of radium. I had been feeling my way into this field, except that I was working with those just below the rays we use in radio. Here I found one which had the penetrative power of the radio wave, with something else, a power of disintegration, an actual breaking down of the structure of material substances, as the X-ray burns away cancer cells. For want of a better name, I call it the Kriml ray.

"The projector is motivated by a Heidel battery, and draws its fuel from the limitless universe. The emanation mows down all material substance in its path. I direct the beam at the base of a building. Its underpinning eaten away, the building crumbles and falls."

● A fanatical light glowed in the old man's eyes, and he continued, half to himself.

"Crazy Kriml ten years ago was a rich man. Those riches are gone. In the place of riches are my machines of vengeance, scattered throughout Chicago, and the cities of America. When I turn a switch, they will start eating, like so many hungry termites, at the foundations of the great buildings, and those man-made structures, built on sand, will topple like so many houses of cards.

"Once when I was young, I had two loves. Now I have one—my country. Not the country as you see it now, or as you knew it a hundred years ago, nourishing a gigantic tarantula to its bosom; but the country of our common forefathers, who wrested the soil from the savages and from a savage nature, by sheer courage and love of home, endurance and patriotism.

"What of our people now? There are two classes, the preying lawless, the plodding serf. The one satisfies his belly hunger and lusts; the other pulls his belt tighter and plods on. The one lives in reckless, heartless luxury; the other spawns in abject poverty. The one must go; the other survives only if he has the will, the spirit to survive."

"But you are attempting," I hazarded, "to interfere with the normal process of evolution."

"That may be true," he answered, slowly. "That may be true. But may it not also be true that I am a creature of evolution, of the process, a tool through which nature will work? Man grows as he overcomes obstacles. The obstacle will be a catastrophe such as the world has not known."

"And to test your theory, to destroy the guilty, you would make the innocent suffer," I interjected. "Surely the aged men like yourself, the women, the children, babes still at their mothers' breasts—surely they are deserving of compassion?"

"The eternal question," he replied. "Who are the guilty—and who the innocent? Are the guilty those who imposed upon the weaknesses, the spinelessness, of the many? Are the old men, who condoned lawlessness, both actively and passively, are they innocent? And are they less innocent—or less guilty—than those women whose eternal duty has been to lead their men, guide their footsteps and inspire them? As for the children—their choice is a life of bondage or the freedom of death.

"But you would make of me a murderer. I am not destroying them. I destroy only the foolhardy, who failed to heed my warning—surely a warning powerful enough to carry conviction to the wise. To those wise, I offer life, a happier, more useful, a fuller life. To those who can survive the metamorphosis from serfdom to freedom, from dependence to independence . . . And your Alice, young man, for whose sake you seek to stay my hand, she would chose rather to go as she must go, for the sake of the future generations. And her death be laid at the door of Ratoni!"

He rose from his chair, held out a hand.

"Now, my friend, I will say good-bye."

It was past one o'clock. In another hour, Kriml would carry out his ghastly threat.

"And if I . . . should not let you go?" I breathed. He smiled grimly. "Move to stay me and I should blast you with this flame." He indicated the pistol. "Nor could your youthful strength stay me," he added, gripping down upon the hand he held with a pressure which made me wince with pain.

"But I have no fear of you. See, if you wish you may accompany me, if you will consent to be blindfolded. For remember, you are a member of my secret organization. What do you say?

The fear of failure if I should attack him there, the hope of an opportunity if I should accompany him, moved me to allow myself to be blindfolded. In the helio, for a time I tried to follow the direction he took, but it was not possible. Sometime later, fifteen or twenty minutes it seemed, we landed on another roof-top, and Kriml guided me to an elevator. We stopped after a breathless drop; and when Kriml removed the blindfold, we were in a small room, nearly on a level with the lower streets, in which stood a gigantic replica of the infernal machine Kriml had demonstrated a few hours before. Kriml caressed lovingly the sinister projector tube, which pointed at the drawn curtain of a window.

"In ten minutes," he said, "in ten short minutes, you go into action. First the Commonwealth Building; then Radio Square; then the power-plant—and all Chicago!"

"A hundred like this," he turned to me, "are scattered over the city. When I pull a single switch, which I will show you, they are started into action, the Heidel battery

infra-red zone, this guess hazarded by the description Kriml later gives.

Very little progress was made in the last half of the 20th and first half of the 21st centuries in fathoming the possibilities of the so-called light rays. The shortest utilized was the cosmic ray, or Millikan. Next came the short waves of radium, the Grens ray, the ultra-violet, the visible spectrum, and the infra-red, the latter often confused with those which were utilized in radio because their lengths merged, and because of the unusual powers of penetration of the longer waves in the zone.

An illustration of the incomplete knowledge of the times is found in a reference work which explained that "all of these oscillations of the ether are generated by electricity"—yet did not explain the nature of electricity! This was not due, moreover, to oversight. Electricity was known only as a phenomenon.

It must not be inferred that the editor deprecates the knowledge of the ancients, or underrates their contributions to science. They were pioneers, sailing uncharted oceans. Their achievements are remarkable in view of the groping-in-the-dark to which they, perforce, resorted.

on each furnishing the electricity. They spew forth destruction until the battery is exhausted."

● I shuddered. Across from this building was the Commonwealth Building, and at its very top, lay Alice, now awake and wondering what her fate was to be. Ratoni, probably already had fled. When Kriml threw the switch, Alice would die.

Kriml had pulled out his watch. "Five minutes," he observed. "Would you like to watch me throw the switch?"

His gun was in his hand now. He evidently did not plan on a frustration of his incomprehensible scheme. Perhaps I could catch him off guard . . . I shrugged in seeming resignation, and again we entered the lift. This time I was not blindfolded. We rode nearly to the top of the building and to another room, rather a suite, where Kriml apparently had done much of his experimenting. But I had no eye for the heterogeneous mass of apparatus; my gaze was fixed on an exaggerated large switch on the wall opposite the door, above which the words, "The Big Shot," had been painted in a moment of insane humor by the crazy man.

Straight toward that deadly switch Kriml hurried, my presence and all else forgotten. I sprang after him.

"Kriml!" I shouted, "touch that switch and I'll kill you, if I die myself!"

He turned, snarling, the gun in his hand.

"Force me and I'll burn you!" he warned, stepping backward the while. Frenziedly I leaped, despairing of success, yet willing to die in a last attempt. And as I leaped, his hand touched the switch, pushed it home, as my hands found his throat.

For an instant I shook him as a terrier shakes a rat, crusing and weeping; then flung him aside to disconnect the switch. The old man, his fingers rubbing his throat, shook his head. "Too late," he croaked. "Too late."

"But it's not too late to send your murdering soul to hell," I cried, and turned back on him, meaning to choke out his life with my hands; but I stopped horrified.

The insane man had dragged himself to a window and stood poised there. He glanced at me for an instant, a half smile on his face, which now seemed tired and worn. One look he took at Chicago, spread out in a panorama before him. "We go together, Chicago," he whispered, and leaped out into space. As he hurtled to the streets, the far-away chimes in a church tower sounded the afternoon's second hour.*

For an instant I gazed at the empty window frame, then rushed for the elevator. The infernal machine, trained on the Commonwealth Building—perhaps it already had done its deadly work but there was a bare chance . . . I did not know the floor. Once I missed it. The second time the wooden door of the little room greeted me as I stepped from the lift. It was locked. Precious minutes were lost seeking a weapon to batter it down. An ancient chair filled my needs. Once, twice, I flung it with all my strength against the light wood, then jumped through the wreckage.

A heady, exhilarating aroma greeted me. The monster tube had turned a cloudy grey, telling me of the destruction started. I still clung to the fragments of the chair. Heedless of results, I brought them down in a mighty blow on the tube. Out of the shattered coils and tubes, like a giant's breath, came a wave of force that picked me up and flung me against the far wall. How long I lay there, struggling to recapture breath and strength I do not know. It seemed hours, but probably was only minutes. At last I dragged across to the window, dreading the sight, yet hoping against hope the ray had not yet accomplished its purpose.

My prayer of thanksgiving when I saw the building still standing turned to a curse against high heaven. Kriml, in life and in death, had tricked me. The building opposite was NOT the Commonwealth. I laughed, an insane cackle, and fell senseless in front of the window.

CHAPTER VII

A Strange Operation

● Balls of fire weighed on my eyelids. With an effort I raised them. A dull red glare shone through the window. Night had fallen.

My throat was parched, my stomach retching. The shoulder which had hit the wall ached so painfully I feared it was broken.

One thought beat dully on my brain. Alice was gone.

I whispered a prayer that I might live long enough to find Ratoni. First I must escape before I was trapped in a falling building.

Painfully I struggled to the elevator, ascended to the top, and climbed into Kriml's helicopter. But it was not until I swung off the building that I realized what had caused the red glare which awakened me.

Chicago was in flames.

In all directions, gigantic sheets of flame leaped upward from heaps of crumpled masonry. Like tongues from the imps of hell flames darted out in ghastly mimicry at the billowing black clouds of smoke. The blazing bed lay as far as I could see; its ends were lost in dense blackness of smoke. Holocaust had stepped in where Kriml left off.

The building across from me—the building I had saved—I recognized now as Radio Square. Lights shone from the upper rooms. Against the bare chance they were sending, I tuned in the vuefone in the helio. A picture formed on the screen, a picture of two young fellows, surrounded by littered ash trays, sweat running from their brows, yet grinning and joking as they gave the world the story of the great Chicago fire.

"Folks," one of the pair was saying. "It's now time for Uncle Piggly's Bedtime Story, eight bells, but all is not well and Uncle Piggly asked us to present his apologies. We will do our best to take his place with a description of the bonfire in our backyard.

"For the benefit of those who have just tuned in to hear Uncle Piggly we will now repeat: Chicago is burn-

*A long mooted question is thus settled in Wakefield's manuscript—the fate of August Kriml. He was never seen after the Chicago disaster, but it was universally believed he was in hiding, awaiting only the need to emerge with his death-dealing weapon. In the light of this account we are forced to believe that Kriml had no organization, that he planned and executed the destruction of Chicago alone, and that he counted on the moral effect of one city's destruction to accomplish his whole purpose. Kriml's contemporaries regarded him as insane; today he is an acknowledged genius, one who anticipated by some 250 years the mastery of those all-powerful rays upon which we largely depend today. His ruthless destruction of Chicago is seen, from this vantage point, as the act of a great humanist, who looked to the ultimate welfare of the race rather than the temporary hurt of a few

ing. Crazy Kriml, who told us he would blow up Chicago forgot to say he was also going to burn us up—"

"Which was a burning shame," interjected the other young fellow.

"Which was a burning . . . Will you be quiet, please? The destruction started at 2 p.m., promptly—

"By courtesy of Julova Watch Company."

"By courtesy of . . . Now I ask you, what am I to do with a guy like that? The destruction started at 2 o'clock as Kriml had warned. First went the Commonwealth Building, then the power-plant. We were third on the list. Something evidently went wrong, though, because this outfit didn't follow on schedule. It was the—"

"—first time we'd been off schedule in two years," came the comment of the incorrigible.

"—first time we'd . . . Excuse him, folks, he's crazy with the heat. It was the only hitch in his entire plan, however, for fifteen minutes after the power-plant fell, a bombardment began of the whole loop district. Jack here and myself were in a helio above the town. When we saw the Square still stood we decided to chance it, and here we are.

"It is estimated that more than three million people left Chicago Wednesday and Thursday, and that not more than a half million were in the downtown district when the bombardment began. They were diehards like ourselves. How many pulled out after 2 o'clock we don't know. But there has been a steady stream of ships passing over the building for the past six hours, hi-tailing it out of Chicago.

"All we can tell you about the fire is that it is some fire. Kriml makes Mrs. O'Leary's cow go way back and sit down."*

"The fire broke out in the wreck of the Commonwealth Building and spread rapidly, even more rapidly than the buildings fell. There were none left to fight the flames, and it is now spreading far into suburban residential districts. We believe hundreds of thousands of people are out here, but they are comparatively safe, since they can outrun the flames.

"What we need now is help. It is too late to save the city, or any part of it; Kriml did his task well. But homeless millions must be fed and housed. New York, Philadelphia, Detroit, Kansas City, St. Louis—bring us food, medicine, tents, nurses, doctors. Nearby cities are filled overrun with fugitives. Rockford and Aurora are guarding all roads and airways with militia, warning fugitives no more can be accommodated.

"The two principal actors in this melodrama are strangely silent. The Big Shot—Ratoni—was believed to have pulled his freight just before the Commonwealth fell. Unverified reports were that he hoped until the last minute Kriml would fail. He is reported to have said he had an ace up his sleeve. And Kriml, the father of this fiesta, spoke his last word this morning. He delivered this letter by messenger, which I read now for the tenth time—no, I can't stand to read it again; here, Jack, you read it."

"I don't need to read it," his companion rejoined, "I know it by heart. Here goes:

"'To the people of America: Tonight your second largest city will be in shambles. And the guilty man will be the Big Shot. I hesitated long before I placed myself in the role of judge and avenger. I hoped the people of America would awaken. That hope was futile. Only a catastrophe of unprecented proportions could stir you from your soddenness, your lethargy, your turpitude. I have brought you that catastrophe. May God grant the price was not too great.

"'To the people of America: Crazy Kriml speaks for the last time. He warns for the last time. Let no city, no village, no community, harbor Ratoni and his ilk. When I strike again, I strike without warning. When I am gone, my students will replace me. And be sure that I, or those who follow me, guided by my spirit, will strike when the need arises.'"

"Such a sweet, harmless old fellow," the boy added.

That was enough. Sick at heart, I headed my machine out across the cool waters of Lake Michigan to Kriml's deserted cottage, my only refuge.

● The horrible days which followed the destruction of Chicago have been described by pens more able than mine. Typhoid and smallpox broke out among the refugees. Both diseases had been dormant for years, and the supplies of toxins were insufficient for the needs. It has been freely predicted since that had it not been for the successful adaption of electro-therapy the nation would have been virtually wiped off the map; and this treatment in the quarantine area was delayed for days because the Chicago power-plant had been the central plant for the mid-western states.*

As soon as I felt able to travel, I set out on my search for Ratoni—the only thing left in life for me, a desire for vengeance. Wherever he was, I knew he would not dare to be surrounded by his usual heavy bodyguard, and if I could find him I did not doubt my revenge would be easy.

I reasoned Ratoni would seek to cross the nearest border line; and I also reasoned that immigration officers of Canada would be unusually diligent in preventing him from crossing. That took me to Detroit, and there, by chance, my search ended.

I had quartered myself in a dingy section of the city, and spent my days patrolling the streets, confident that sooner or later I would see Ratoni or one of his henchmen, and from him learn where the Big Shot was. But the man I found was the last I expected—the impeccable James, butler to two Big Shots.

His uniform abandoned, his clothes ragged and soiled, James was buying fruit at a street stand at which I had stopped. He first recognized me.

"Begging your pardon, sir, but aren't you Mr. Wakefield, sir?" he accosted me.

"James!" I turned on him, astounded. "What are you doing here?"

He was somewhat embarrassed at being caught at the menial task of buying groceries. "You see, sir, we had

*A disastrous fire in Chicago in the nineteenth century was attributed, in legend, to a cow which kicked over a lantern in a barn. Fires were numerous in those days of open-flame lights. On the ruins of this historical fire was raised the second largest city in the United States, a city of such fabulous wealth that the residential section in which its builders lived was known as "the Gold Coast."

*As Wakefield implies, disease took a greater toll than the actual catastrophe, although it was not possible to estimate the dead in the Chicago fire. A quarantine area, a hundred miles in diameter, was rigidly maintained for three months. This probably saved the nation from a devastating plague. The two diseases he names had been brought under control by serum treatment by the end of the 20th century, hence few had been immunized against either at the time of the catastrophe.

to let some of the—er—help go, sir, since we—er—left Chicago.

"We?" I questioned, "what do you mean? Are you still with Ratoni?"

"Yes, sir," he answered, "with the Big Shot and Miss Alice."

I grabbed the man by both arms. "What are you talking about," I shouted at him. "Miss Alice died in Chicago."

"Begging your pardon, sir," he replied, "but she didn't.

"Don't sir," he exclaimed, a minute later, "you're mussing me all up!"

I was doing just that. I had grabbed him around the neck and was doing a war dance, around and around in the street. James brushed down his clothes when I loosed him, looking at me reproachfully.

"As for that," he added, "we supposed you were dead, sir."

Of course. Ratoni, believing me dead, had seen no reason for keeping Alice a prisoner in the doomed building, and had taken her with him when he fled. Another thought struck me, and I turned on him again. "James is Miss Alice—all right?"

"As well as could be expected, sir," he answered. "She's pretty near worn out, though. You see, Ratoni has been ill, very ill, and he will not permit us to call in help. Perhaps you would help us?" he added hopefully.

I would do anything that would take me to Alice, and told him so. He led me to a cheap rooming house of 1930 vintage, up two flights of stairs to one of those atrocities known as a kitchenette apartment. James went in, and I heard Alice's voice, weary and forlorn.

"He's taken a turn for the worse," she said. "He doesn't seem to recognize me any longer." Then she saw me.

I draw the curtain over the reconciliation. We laughed and cried as we related our joint adventures. But there was no time, now, for talk if we were to help this pale figure on the only bed in the apartment—for whom, strangely enough, I no longer held hate or malice.

"I am convinced," Alice said, "that it is appendicitis. You know he has always suffered from it, in chronic form. But he swears he will kill any stranger who enters. He is asleep now, but I dare not bring in a physician to examine him. He sleeps with his gun in his hand."

That was simple. I bent over the sleeping man, turned back the covers, and grasped the hand that held the gun. His eyes opened, and a gleam of recognition came in them. The lids wavered, closed again.

"Hello, Wakefield," he said. "I double-crossed you."

The lids wavered, closed again.

"Ratoni," I said, "we are going to call a physician." The hand holding the gun tensed, then relaxed, and I pulled it away. "You've got me on the spot, kid," he murmured.

I summoned a neighborhood physician and tersely explained the man, I believed, had an acute attack of appendicitis, and that he had objected to calling a physician. The doctor understood well enough how residents of this unsavory neighborhood might object to having a physician in, but he was frankly puzzled about my description of the ailment.

"Appendicitis," I explained, "infection of the vermiform appendix." I was becoming impatient with him. "The case is very clear, even to a layman like myself."

"Vermiform appendix . . ." The physician mulled the words over. He seemed to be thinking. Suddenly he turned to me in triumph. "I knew the words were familiar from my anatomical studies. Where you learned them, I do not know; but if you know what you're saying, you must also know that the vestige has disappeared from the human anatomy."

That staggered me. The appendix had disappeared! But regardless of that, I knew Ratoni and I and Alice still possessed ours, and Ratoni's was very much in need of amputation. It was no time for dissimulation. So I told the doctor who we were, and how Ratoni came rightfully by his appendix.

I will say that when Dr. Ross comprehended the situation he acted fast. He first located a colleague, instructed him in detail where a description of the simple appendicitis operation could be found in his medical library, and other pertinent details. In five minutes, a helio ambulance was on the roof, and in fifteen minutes more Ratoni was on the operating table.

Dr. Ross's colleague must have worked fast, too, for there were no less than eight doctors present to witness the operation. I was permitted to stand outside the glass walls of the operating room and look on.

Everything seemed to go off splendidly. In a surprisingly short time Dr. Ross straightened up triumphantly, and his colleagues gathered round to look upon the fragment of flesh which had been the focal point for Ratoni's pain. Even the nurses paused to look, to exclaim and gesture. It was, no doubt, an epochal day in the life of Dr. Ross—the only man to perform an appendectomy in more than a half century. It was his crowning hour. I was amused at the delighted enthusiasm on the faces of the doctors—amused, then irritated, finally downright alarmed; for in their enthusiasm they literally forgot the patient!

I started shouting but they could not hear me through the sound-proof walls; then I beat on the walls until one of the nurses glanced up, and I pointed at the body. Then I pushed my way through the crowded onlookers, unable to look longer.

Those readers who are interested may find Dr. Ross' account of his successful apendectomy in the Journal of the American Medical Association. Ratoni lingered two days, semi-conscious, then died in a hospital bed, victim of an anachroniam. Dr. Ross explained that the case was hopeless from the start and I am willing to concede the point.

Two years have elapsed since his death. As I write, I look out of the window of Kriml's cabin—now enlarged and made into a home for Alice and me. Only our complete happiness here together has been able to veil the memory of those nightmarish events through which we went together, to dispel the nostalgia for our own time.

Nor can I, looking forward, discover whether the gangster will return to the American scene of his greatest triumph, his bravado recovered after a few brief years of peace. But in my heart I believe those thousands did not die in vain; that Kriml's solution, drastic as it was, was effective; that the people of this freedom loving nation, their lesson learned, will forever jealously guard against the threat of domination; and that we are on the dawning of a new era in which the degradation of empires, as well as the degradation of the masses as serfs of the mighty, will be relegated to the musty pages of ancient history.

THE END.

(*Illustration by Paul*)

They proceeded to examine the wreck and identified it as the long missing SELENITE. An eyeless skeleton met their gaze.

MASTER OF THE ASTEROID

By CLARK ASHTON SMITH

● Many authors, we believe, have not paid sufficient attention in their description of interplanetary adventures, to the mental and physical effects of travel through space. Mr. Smith sets out to remedy that fault and to give us in some detail the inner life of space travellers.

The despair that must seize on men travelling, for all they know, through an infinite void; the fever of restlessness from being too long confined; the madness of suspicions directed against fellow travellers, all are things that may wreck the best planned expedition.

And although chemists and physicists will labor long and well in making possible a successful journey to other worlds, the job has been but half done until some provision has been made to guard men against the dangers that lurk in themselves.

● Man's conquest of the interplanetary gulfs has been fraught with many tragedies. Vessel after vessel, like a venturous mote, has disappeared in the infinite—and has not returned.

Inevitably, for the most part, the lost explorers have left no record of their fate. Their ships have flared as unknown meteors through the atmosphere of the further planets, to fall like shapeless metal cinders on a never-visited terrain; or have become the dead, frozen satellites of other worlds or moons. A few, perhaps, among the unreturning fliers, have succeeded in landing somewhere, and their crews have perished immediately, or survived for a little while amid the inconceivably hostile environment of a cosmos not designed for men.

In later years, with the progress of exploration, more than one of the early derelicts has been descried, following a solitary orbit; and the wrecks of others have been found on ultra-terrene shores. Occasionally—not often—it has been possible to reconstruct the details of the lone, remote disaster. Sometimes, in a fused and twisted hull, a log or record has been preserved intact. Among others, there is the case of the *Selenite*, the first known rocket ship to dare the zone of the asteroids.

At the time of its disappearance, fifty years ago, in 1980, a dozen voyages had been made to Mars, and a rocket base had been established in Syrtis Major, with a small permanent colony of terrestrials, all of whom were trained scientists as well as men of uncommon hardihood and physical stamina.

The effects of the Martian climate, and the utter alienation from familiar conditions, as might have been expected, were extremely trying and even disastrous. There was an unremitting struggle with deadly or pestiferous bacteria new to science, a perpetual assailment by dangerous radiations of soil and air and sun. The lessened gravity played its part also, in contributing to curious and profound disturbances of metabolism. The worst effects were nervous and mental. Queer, irrational animosities, manias or phobias never classified by alienists, began to develop among the personnel at the rocket base.

Violent quarrels broke out between men who were normally controlled and urbane. The party, numbering fifteen in all, soon divided into several cliques, one against the others; and this morbid antagonism led at times to actual fighting and even bloodshed.

One of the cliques consisted of three men, Roger Colt, Phil Gershom and Edmond Beverly. These three, through banding together in a curious fashion, became intolerably antisocial toward all the others. It would seem that they must have gone close to the borderline of insanity, and were subject to actual delusions. At any rate, they conceived the idea that Mars, with its fifteen Earthmen, was entirely too crowded. Voicing this idea in a most offensive and belligerent manner, they also began to hint their intention of faring even further afield in space.

Their hints were not taken seriously by the others, since a crew of three was insufficient for the proper manning of even the lightest rocket vessel used at that time. Colt, Gershom and Beverly had no difficulty at all in stealing the *Selenite*, the smaller of the two ships then reposing at the Syrtis Major base. Their fellow-colonists were aroused one night by the cannon-like roar of the discharging tubes, and emerged from their huts of sheet-iron in time to see the vessel departing in a fiery streak toward Jupiter.

No attempt was made to follow it; but the incident helped to sober the remaining twelve and to calm their unnatural animosities. It was believed, from certain remarks that the malcontents had let drop, that their particular objective was Ganymede or Europa, both of which were thought to possess an atmosphere suitable for human respiration.

It seemed very doubtful, however, that they could pass the perilous belt of the asteroids. Apart from the difficulty of steering a course amid these innumerable far-strewn bodies, the *Selenite* was not fueled or provisioned for a voyage of such length. Gershom, Colt and Beverly, in their mad haste to quit the company of the others, had forgotten to calculate the actual necessities of their

proposed voyage, and had wholly overlooked its dangers.

After that departing flash on the Martian skies, the *Selenite* was not seen again; and its fate remained a mystery for thirty years. Then, on tiny, remote Phocea, its dented wreck was found by the Holdane expedition to the asteroids.

Phocea, at the time of the expedition's visit, was in aphelion. Like others of the planetoids, it was discovered to possess a rare atmosphere, too thin for human breathing. Both hemispheres were covered with thin snow; and lying amid this snow, the *Selenite* was sighted by the explorers as they circled about the little world.

● Much interest prevailed, for the shape of the partially bare mound was plainly recognizable and not to be confused with the surrounding rocks. Holdane ordered a landing, and several men in space suits proceeded to examine the wreck. They soon identified it as the long-missing *Selenite*.

Peering in through one of the thick, unbreakable neocrystal ports, they met the eyeless gaze of a human skeleton, which had fallen forward against the slanting, overhanging wall. It seemed to grin a sardonic welcome. The vessel's hull was partly buried in the stony soil, and had been crumpled and even slightly fused, though not broken, by its plunge. The manhole lid was so thoroughly jammed and soldered that it was impossible to effect an entrance without the use of a cutting-torch.

Enormous, withered, cryptogamous plants with the habit of vines, that crumbled at a touch, were clinging to the hull and the adjacent rocks. In the light snow beneath the skeleton-guarded port, a number of sharded bodies were lying, which proved to be those of tall insect forms, like giant *phasmidae*.

From the posture and arrangement of their lank, pipy members, longer than those of a man, it seemed that they had walked erect. They were unimaginably grotesque, and their composition, due to the almost non-existent gravity, was fantastically porous and unsubstantial. Many more bodies, of a similar type, were afterwards found on other portions of the planetoid; but no living thing was discovered. All life, it was plain, had perished in the trans-arctic winter of Phocea's aphelion.

When the *Selenite* had been entered, the party learned, from a sort of log or notebook found on the floor, that the skeleton was all that remained of Edmond Beverly. There was no trace of his two companions; but the log, on examination, proved to contain a record of their fate as well as the subsequent adventures of Beverly almost to the very moment of his own death from a doubtful, unexplained cause.

The tale was a strange and tragic one. Beverly, it would seem, had written it day by day, after the departure from Syrtis Major, in an effort to retain a semblance of morale and mental coherence amid the black alienation and disorientation of infinitude. I transcribe it herewith, omitting only the earlier passages, which were full of unimportant details and personal animadversions. The first entries were all dated, and Beverly had made an heroic attempt to measure and mark off the seasonless night of the void in terms of earthly time. But after the disastrous landing on Phocea, he had abandoned this; and the actual length of time covered by his entries can only be conjectured.

The Log

Sept. 10th. Mars is only a pale-red star through our rear ports; and according to my calculations we will soon approach the orbit of the nearer asteroids. Jupiter and its system of moons are seemingly as far off as ever, like beacons on the unattainable shore of immensity. More even than at first, I feel that dreadful suffocating illusion, which accompanies ether-travel, of being perfectly stationary in a static void.

Gershom, however, complains of a disturbance of equilibrium, with much vertigo and a frequent sense of falling, as if the vessel were sinking beneath him through bottomless space at a headlong speed. The causation of such symptoms is rather obscure, since the artificial gravity regulators are in good working order. Colt and I have not suffered from any similar disturbance. It seems to me that the sense of falling would be almost a relief from this illusion of nightmare immobility; but Gershom appears to be greatly distressed by it, and says that his hallucination is growing stronger, with fewer and briefer intervals of normality. He fears that it will become continuous.

Sept. 11th. Colt has made an estimate of our fuel and provisions and thinks that with careful husbandry we will be able to reach Europa. I have been checking up on his calculations, and find that he is altogether too sanguine. According to my estimate, the fuel will give out while we are still midway in the belt of asteroids; though the food, water and compressed air would possibly take us most of the way to Europa.

This discovery I must conceal from the others. It is too late to turn back. I wonder if we have all been mad, to start out on this errant voyage into cosmical immensity with no real preparation or thought of consequences. Colt, it would seem, has even lost the power of mathematical calculation: his figures are full of the most egregious errors.

Gershom has been unable to sleep, and is not even fit to take his turn at the watch. The hallucination of falling obsesses him perpetually, and he cries out in terror, thinking that the vessel is about to crash on some dark, unknown planet to which it is being drawn by an irresistable gravitation. Eating, drinking and locomotion are very difficult for him, and he complains that he cannot even draw a full breath—that the air is snatched away from him in his precipitate descent. His condition is indeed painful and pitiable.

Sept. 12th. Gershom is worse—bromide of potassium and even a heavy dose of morphine from the *Selenite's* medicine lockers, have not relieved him or enabled him to sleep. He has the look of a drowning man and seems to be on the point of strangulation. It is hard for him to speak.

Colt has become very morose and sullen, and snarls at me when I address him. I think that Gershom's plight has preyed sorely upon his nerves—as it has on mine. But my burden is heavier than Colt's: for I know the inevitable doom of our insane and ill-starred expedition. Sometimes I wish it were all over . . . The hells of the human mind are vaster than space, darker than the night between the worlds . . . and all three of us have spent several eternities in hell. Our attempt to flee has only plunged us into a black and shoreless limbo, through which we are

fated to carry still our own private perdition.

I, too, like Gershom, have been unable to sleep. But, unlike him, I am tormented by the illusion of eternal immobility. In spite of the daily calculations that assure me of our progress through the gulf, I cannot convince myself that we have moved at all. It seems to me that we hang suspended like Mohammed's coffin, remote from earth and equally remote from the stars, in an incommensurable vastness without bourn or direction. I cannot describe the awfulness of the feeling.

● Sept. 13th. During my watch, Colt opened the medicine locker and managed to shoot himself full of morphine. When his turn came, he was in a stupor and I could do nothing to rouse him. Gershom had gotten steadily worse and seemed to be enduring a thousand deaths . . . so there was nothing for me to do but keep on with the watch as long as I could. I locked the controls, anyway, so that the vessel would continue its course without human guidance if I should fall asleep.

I don't know how long I kept awake—nor how long I slept. I was aroused by a queer hissing whose nature and cause I could not identify at first. I looked around and saw that Colt was in his hammock, still lying in a drug-induced sopor. Then I saw that Gershom was gone, and began to realize that the hissing came from the air-lock. The inner door of the lock was closed securely—but evidently someone had opened the outer manhole, and the sound was being made by the escaping air. It grew fainter and ceased as I listened.

I knew then what had happened—Gershom, unable to endure his strange hallucination any longer, had actually flung himself into space from the *Selenite!* Going to the rear ports, I saw his body, with a pale, slightly bloated face and open, bulging eyes. It was following us like a satellite, keeping an even distance of ten or twelve feet from the lee of the vessel's stern. I could have gone out in a space suit to retrieve the body; but I felt sure that Gershom was already dead, and the effort seemed more than useless. Since there was no leakage of air from the interior, I did not even try to close the manhole.

I hope and pray that Gershom is at peace. He will float forever in cosmic space—and in that further void where the torment of human consciousness can never follow.

Sept. 15th. We have kept our course somehow, though Colt is too demoralized and drug-sodden to be of much assistance. I pity him when the limited supply of morphine gives out.

Gershom's body is still following us, held by the slight power of the vessel's gravitational attraction. It seems to terrify Colt in his more lucid moments; and he complains that we are being haunted by the dead man. It's bad enough for me, too, and I wonder how much my nerves and mind will stand. Sometimes I think that I am beginning to develop the delusion that tortured Gershom and drove him to his death. An awful dizziness assails me, and I fear that I shall start to fall. But somehow I regain my equilibrium.

Clark Ashton Smith

Sept. 16th. Colt used up all the morphine, and began to show signs of intense depression and uncontrollable nervousness. His fear of the satellite corpse appeared to grow upon him like an obsession; and I could do nothing to reassure him. His terror was deepened by an eerie, superstitious belief.

"I tell you, I hear Gershom calling us," he cried. "He wants company, out there in the black, frozen emptiness; and he won't leave the vessel till one of us goes out to join him. You've got to go, Beverly—it's either you or me—otherwise he'll follow the *Selenite* forever."

I tried to reason with him, but in vain. He turned upon me in a sudden shift of maniacal rage.

"Damn you, I'll throw you out, if you won't go any other way!" he shrieked.

Clawing and mouthing like a mad beast, he leaped toward me where I sat before the *Selenite's* control-board. I was almost overborne by his onset, for he fought with a wild and frantic strength . . . I don't like to write down all that happened, for the mere recollection makes me sick . . . Finally he got me by the throat, with a sharp-nailed clutch that I could not loosen and began to choke me to death. In self-defense, I had to shoot him with an automatic which I carried in my pocket. Reeling dizzily, gasping for breath, I found myself staring down at his prostrate body, from which a crimson puddle was widening on the floor.

Somehow, I managed to put on a space suit. Dragging Colt by the ankles, I got him to the inner door of the air-lock. When I opened the door, the escaping air hurled me toward the open manhole together with the corpse; and it was hard to regain my footing and avoid being carried through into space. Colt's body, turning transversely in its movement, was jammed across the manhole; and I had to thrust it out with my hands. Then I closed the lid after it. When I returned to the ship's interior, I saw it floating, pale and bloated, beside the corpse of Gershom.

Alone!

● Sept. 17th. I am alone—and yet most horribly I am pursued and companioned by the dead men. I have sought to concentrate my faculties on the hopeless problem of survival, on the exigencies of space navigation; but it is all useless. Ever I am aware of those stiff and swollen bodies, swimming in the awful silence of the void, with the white, airless sun like a leprosy of light on their upturned faces.

I try to keep my eyes on the control-board—on the astronomic charts—on the log I am writing—on the stars toward which I am travelling. But a frightful and irresistable magnetism makes me turn at intervals, and mechanically, helplessly, to the rearward ports. There are no words for what I feel and think—and words are as lost things along with the worlds I have left so far behind. I sink in a chaos of vertiginous horror, beyond all possibility of return.

Sept. 18th. I am entering the zone of the asteroids—those desert rocks, fragmentary and amorphous, that whirl in far-scattered array between Mars and Jupiter. Today the *Selenite* passed very close to one of them—a small body like a broken-off mountain, which heaved suddenly from the gulf with knife-sharp pinnacles and black gullies that seemed to cleave its very heart.

The *Selenite* would have crashed full upon it in a few instants, if I had not reversed the power and steered in an abrupt diagonal to the right. As it was, I passed near enough for the bodies of Colt and Gershom to be caught by the gravitational pull of the planetoid; and when I looked back at the receding rock, after the vessel was out of danger, they had disappeared from sight. Finally I located them with the telescopic reflector, and saw that they were revolving in space, like infinitesimal moons, about that awful, naked asteroid. Perhaps they will float thus forever, or will drift gradually down in lessening circles, to find a tomb in one of those bleak, bottomless ravines.

Sept. 19th. I have passed several more of the asteroids—irregular fragments, little larger than meteoric stones; and all my skill of spacemanship has been taxed severely to avert collision. Because of the need for unrelaxing vigilance, I have been compelled to keep awake at all times. But sooner or later, sleep will overpower me, and the *Selenite* will crash to destruction.

After all, it matters little: the end is inevitable, and must come soon enough in any case. The store of contrated food, the tanks of compressed oxygen, might keep me alive for many months, since there is no one but myself to consume them. But the fuel is almost gone, as I know from my former calculations. At any moment, the propulsion may cease. Then the vessel will drift idly and helplessly in this cosmic limbo, and be drawn to its doom on some asteroidal reef.

Sept. 21st. (?) Everything I have expected has happened, and yet by some miracle of chance—or mischance—I am still alive.

The fuel gave out yesterday (at least, I think it was yesterday). But I was too close to the nadir of physical and mental exhaustion to realize clearly that the rocket-explosions had ceased. I was dead for want of sleep, and had gotten into a state beyond hope or despair. Dimly I remember setting the vessel's controls through automatic force of habit; and then I lashed myself in my hammock and fell asleep instantly.

I have no means of guessing how long I slept. Vaguely, in the gulf beyond dreams, I heard a crash as of far-off thunder, and felt a violent vibration that jarred me into dull wakefulness. A sensation of unnatural, sweltering heat began to oppress me as I struggled toward consciousness; but when I had opened my heavy eyes, I was unable to determine for some little time what had really happened.

Twisting my head so that I could peer out through one of the ports, I was startled to see, on a purple-black sky, an icy, glittering horizon of saw-edged rocks.

For an instant, I thought that the vessel was about to strike on some looming planetoid. Then, overwhelmingly, I realized *that the crash had already occurred*—that I had been awakened from my coma-like slumber by the falling of the *Selenite* upon one of those cosmic islets.

I was wide-awake now, and I hastened to unlash myself from the hammock. I found that the floor was pitched sharply, as if the vessel had landed on a slope or had buried its nose in the alien terrain. Feeling a queer, disconcerting lightness, and barely able to re-establish my feet on the floor, I gradually made my way to the nearest port. It was plain that the artificial gravity-system of the flier had been thrown out of commission by the crash, and that I was now subject only to the feeble gravitation of the asteroid. It seemed to me that I was light and incorporeal as a cloud—that I was no more than the airy specter of my former self.

● The floor and walls were strangely hot; and it came to me that the heating must have been caused by the passage of the *Selenite* through some sort of atmosphere. The asteroid, then, was not wholly airless, as such bodies are commonly supposed to be; and probably it was one of the larger fragments, with a diameter of many miles—perhaps hundreds. But even this realization failed to prepare me for the weird and surprising scene upon which I gazed through the port.

The horizon of serrate peaks, like a miniature mountain-range, lay at a distance of several hundred yards. Above it, the small, intensely brilliant sun, like a fiery moon in its magnitude, was sinking with visible rapidity in the dark sky that revealed the major stars and planets.

The *Selenite* had plunged into a shallow valley, and had half-buried its prow and bottom in a soil that was formed by decomposing rock, mainly basaltic. All about were fretted ridges, guttering pillars and pinnacles; and over these, amazingly, there clambered frail, pipy, leafless vines with broad, yellow-green tendrils flat and thin as paper. Insubstantial-looking lichens, taller than a man, and having the form of flat antlers, grew in single rows and thickets along the valley.

Between the thickets, I saw the approach of certain living creatures who rose from behind the middle rocks with the suddenness and lightness of leaping insects. They seemed to skim the ground with long, flying steps that were both easy and abrupt.

There were five of these beings, who, no doubt, had been attracted by the fall of the *Selenite* from space and were coming to inspect it. In a few moments, they neared the vessel and paused before it with the same effortless ease that had marked all their movements.

What they really were, I do not know; but for want of other analogies, I must liken them to insects. Standing perfectly erect, they towered seven feet in air. Their eyes, like faceted opals, at the end of curving protractile stalks, rose level with the port. Their unbelievably thin limbs, their stem-like bodies, comparable to those of the phasmidae, or "walking-sticks," were covered with grey-green shards. Their heads, triangular in shape, were flanked with immense, perforated membranes, and were fitted with mandibular mouths that seemed to grin eternally.

I think that they saw me with those weird, inexpressive eyes; for they drew nearer, pressing against the very port, till I could have touched them with my hand if the port had been open. Perhaps they too were surprised: for the thin eye-stalks seemed to lengthen as they stared; and there was a queer waving of their sharded arms, a quivering of their horny mouths, as if they were holding converse with each other. After a while they went away, vanishing swiftly beyond the near horizon.

Since then, I have examined the *Selenite* as fully as possible, to ascertain the extent of the damage. I think that the outer hull has been crumpled or even fused in places: for when I approached the manhole, clad in a space-suit, with the idea of emerging, I found that I could not open the lid. My exit from the flier has been rendered impossible, since I have no tools with which to cut the heavy metal or shatter the tough, neo-crystal ports. I am sealed in the *Selenite* as in a prison; and the prison, in due time, must also become my tomb.

Later. I shall no longer try to date this record. It is impossible, under the circumstances, to retain even an approximate sense of earthly time. The chronometers have ceased running, and their machinery has been hopelessly jarred by the vessel's fall. The diurnal periods of this planetoid are, it would seem, no more than an hour or two in duration; and the nights are equally short. Darkness swept upon the landscape like a black wing after I had finished writing my last entry; and since then, so many of these ephemeral days and nights have shuttled by, that I have now ceased to count them. My very sense of duration is becoming oddly confused. Now that I have grown somewhat used to my situation, the brief days drag with immeasurable tedium.

The beings whom I call the walking-sticks have returned to the vessel, coming daily, and bringing scores and hundreds of others. It would seem that they correspond in some measure to humanity, being the dominant life-form of this little world. In most ways, they are incomprehensibly alien; but certain of their actions bear a remote kinship to those of men, and suggest similar impulses and instincts.

Evidently they are curious. They crowd around the *Selenite* in great numbers, inspecting it with their stalk-borne eyes, touching the hull and ports with their attenuated members. I believe they are trying to establish some sort of communication with me. I cannot be sure that they emit vocal sounds, since the hull of the flier is sound-proof; but I am sure that the stiff, semaphoric gestures which they repeat in a certain order before the port as soon as they catch sight of me, are fraught with conscious and definite meaning.

The Living Tomb

Also, I surmise an actual veneration in their attitude, such as would be accorded by savages to some mysterious visitant from the heavens. Each day, when they gather before the ship, they bring curious spongy fruits and porous vegetable forms which they leave like a sacrificial offering on the ground. By their gestures, they seem to implore me to accept these offerings.

Oddly enough, the fruits and vegetables always disappear during the night. They are eaten by large, luminous, flying creatures with filmy wings, that seem to be wholly nocturnal in their habits. Doubtless, however, the walking-sticks believe that I, the strange ultra-stellar god, have accepted the sacrifice.

It is all strange, unreal, immaterial. The loss of normal gravity makes me feel like a phantom; and I seem to live in a phantom world. My thoughts, my memories, my despair—all are no more than mists that waver on the verge of oblivion . . . And yet, by some fantastic irony, I am worshipped as a god! . . .

Innumerable days have gone by since I made the last entry in this log. The seasons of the asteroid have changed: the days have grown briefer, the nights longer; and a bleak wintriness pervades the valley. The frail, flat vines are withering on the rocks, and the tall lichen-thickets have assumed funereal autumn hues of madder and mauve . . . The sun revolves in a low arc above the saw-toothed horizon, and its orb is small and pale as if it were receding into the black gulf among the stars.

The people of the asteroid appear less often, they seem fewer in number, and their sacrificial gifts are rare and scant. No longer do they bring sponge-like fruits, but only pale and porous fungi that seem to have been gathered in caverns.

They move slowly, as if the winter cold were beginning to numb them. Yesterday, three of them fell, after depositing their gifts, and lay still before the flier. They have not moved, and I feel sure that they are dead. The luminous night-flying creatures have ceased to come, and the sacrifices remain undisturbed beside their bearers.

* * * *

The awfulness of my fate has closed upon me today. No more of the walking-sticks have appeared. I think that they have all died—the ephemerae of this tiny world that is bearing me with it into some Arctic limbo of the solar system. Doubtless their life-time corresponds only to its summer—to its perihelion.

Thin clouds have gathered in the dark air, and snow is falling like a fine powder. I feel an unspeakable desolation—a dreariness that I cannot write. The heating-apparatus of the *Selenite* is still in good working-order; so the cold cannot reach me. But the black frost of space has fallen upon my spirit. Strange—I did not feel so utterly bereft and alone while the insect people came daily. Now that they come no more, I seem to have been overtaken by the ultimate horror of solitude, by the chill terror of an alienation beyond life. I can write no longer, for my brain and my heart fail me.

* * * *

Still, it would seem, I live, after an eternity of darkness and madness in the flier, of death and winter in the world outside. During that time, I have not written in the log; and I know not what obscure impulse prompts me to resume a practice so irrational and futile.

I think it is the sun, passing in a higher and longer arc above the dead landscape, that has called me back from the utterness of despair. The snow has melted from the rocks, forming little rills and pools of water; and strange plant-buds are protruding from the sandy soil. They lift and swell visibly as I watch them. I am beyond hope, beyond life, in a weird vacuum; but I see these things as a condemned captive sees the stirring of spring from his cell. They rouse in me an emotion whose very name I had forgotten.

My food-supply is getting low, and the reserve of compressed air is even lower. I am afraid to calculate how much longer it will last. I have tried to break the neo-crystal ports with a large monkey-wrench for hammer; but the blows, owing partly to my own weightlessness, are futile as the tapping of a feather. Anyway, in all likelihood, the outside air would be too thin for human respiration.

(Concluded on page 469)

(*Illustration by Paul*)

In the chair was the form of a man, on the floor lay a woman's figure. We made no move to approach these petrified bodies.

THE MAN OF STONE

By HAZEL HEALD

● Literature is filled with stories of so-called magical powers possessed by individuals. Frequently we find to our surprise that the magic becomes realized in modern science. The magic carpet of the Arabian Nights becomes the airplane; the "open sesame" of Ali Baba becomes the photo-electric cell; and recently we have learned that rays are emitted from human eyes that break down yeast cells, thereby lending a degree of credence to the "evil eye" of old.

Even more, many scientists have discovered in ancient manuscripts actual chemical formulae that were lost to the world, and that proved to be of great value. The alchemists of old may have wasted a good deal of energy in their pottering about after magical elixirs, but they undoubtedly did discover revolutionary things in chemistry. This story is a case in point.

● Ben Hayden was always a stubborn chap, and once he had heard about those strange statues in the upper Adirondacks, nothing could keep him from going to see them. I had been his closest acquaintance for years, and our Damon and Pythias friendship made us inseparable at all times. So when Ben firmly decided to go—well, I had to trot along too, like a faithful collie.

"Jack," he said, "you know Henry Jackson, who was up in a shack beyond Lake Placid for that beastly spot in his lung? Well, he came back the other day nearly cured, but had a lot to say about some devilish queer conditions up there. He ran into the business all of a sudden and can't be sure yet that it's anything more than a case of bizarre sculpture; but just the same his uneasy impression sticks.

"It seems he was out hunting one day, and came across a cave with what looked like a dog in front of it. Just as he was expecting the dog to bark he looked again, and saw that the thing wasn't alive at all. It was a stone dog—but such a perfect image, down to the smallest whisker, that he couldn't decide whether it was a supernaturally clever statue or a petrified animal. He was almost afraid to touch it, but when he did he realized it was surely made of stone.

"After a while he nerved himself up to go in the cave—and there he got a still bigger jolt. Only a little way in there was another stone figure—or what looked like it—but this time it was a man's. It lay on the floor, on its side, wore clothes, and had a peculiar smile on its face. This time Henry didn't stop to do any touching, but beat it straight for the village, Mountain Top, you know. Of course he asked questions—but they did not get him very far. He found he was on a ticklish subject, for the natives only shook their heads, crossed their fingers, and muttered something about a 'Mad Dan'—whoever he was.

"It was too much for Jackson, so he came home weeks ahead of his planned time. He told me all about it because he knows how fond I am of strange things—and oddly enough, I was able to fish up a recollection that dovetailed pretty neatly with his yarn. Do you remember Arthur Wheeler, the sculptor who was such a realist that people began calling him nothing but a solid photographer? I think you knew him slightly. Well, as a matter of fact, he ended up in that part of the Adirondacks himself. Spent a lot of time there, and then dropped out of sight. Never heard from again. Now if stone statues that look like men and dogs are turning up around there, it looks to me as if they might be his work—no matter what the rustics say, or refuse to say, about them. Of course a fellow with Jackson's nerves might easily get flighty and disturbed over things like that; but I'd have done a lot of examining before running away.

"In fact, Jack, I'm going up there now to look things over—and you're coming along with me. It would mean a lot to find Wheeler—or any of his work. Anyhow, the mountain air will brace us both up."

So less than a week later, after a long train ride and a jolting bus trip through breathlessly exquisite scenery, we arrived at Mountain Top in the late, golden sunlight of a June evening. The village comprised only a few small houses, a hotel, and the general store at which our bus drew up; but we knew that the latter would probably prove a focus for such information. Surely enough, the usual group of idlers was gathered around the steps; and when we represented ourselves as health-seekers in search of lodgings they had many recommendations to offer.

Though we had not planned to do any investigating till the next day, Ben could not resist venturing some vague, cautious questions when he noticed the senile garrulousness of one of the ill-clad loafers. He felt, from Jackson's previous experience, that it would be useless to begin with references to the queer statues; but decided to mention Wheeler as one whom we had known, and in whose fate we consequently had a right to be interested.

The crowd seemed uneasy when Sam stopped his whittling and started talking, but they had slight occasion for

alarm. Even this barefoot old mountain decadent tightened up when he heard Wheeler's name, and only with difficulty could Ben get anything coherent out of him.

"Wheeler?" he had finally wheezed, "Oh, yeh—that feller as was all the time blastin' rocks and cuttin' 'em up into statues. So yew knowed him, hey? Wal, they ain't much we kin tell ye, and mebbe that's too much. He stayed out to Mad Dan's cabin in the hills—but not so very long. Got so he wa'nt wanted no more . . . . by Dan, that is. Kinder soft-spoken and got around Dan's wife till the old devil took notice. Pretty sweet on her, I guess. But he took the trail sudden, and nobody's seen hide nor hair of him since. Dan must a told him sumthin' pretty plain—bad feller to git agin ye, Dan is! Better keep away from thar, boys, for they ain't no good in that part of the hills. Dan's ben workin' up a worse and worse mood, and ain't seen about no more. Nor his wife, neither. Guess he's penned her up so's nobody else kin make eyes at her!"

● As Sam resumed his whittling after a few more observations, Ben and I exchanged glances. Here, surely, was a new lead which deserved intensive following up. Deciding to lodge at the hotel, we settled ourselves as quickly as possible; planning for a plunge into the wild hilly country on the next day.

At sunrise we made our start, each bearing a knapsack laden with provisions and such tools as we thought we might need. The day before us had an almost stimulating air of invitation—through which only a faint undercurrent of the sinister ran. Our rough mountain road quickly became steep and winding, so that before long our feet ached considerably.

After about two miles we left the road—crossing a stone wall on our right near a great elm and striking off diagonally toward a steeper slope according to the chart and directions which Jackson had prepared for us. It was rough and briery traveling, but we knew that the cave could not be far off. In the end we came upon the aperture quite suddenly—a black, bush-grown crevice where the ground shot abruptly upward, and beside it, near a shallow rock pool, a small, still figure stood rigid—as if rivaling its own uncanny petrification.

It was a grey dog—or a dog's statue—and as our simultaneous gasp died away we scarcely knew what to think. Jackson had exaggerated nothing, and we could not believe that any sculptor's hand had succeeded in producing such perfection. Every hair of the animal's magnificent coat seemed distinct, and those on the back were bristled up as if some unknown thing had taken him unaware. Ben, at last half-kindly touching the delicate stony fur, gave vent to an exclamation.

"Good God, Jack, but this can't be any statue! Look at it—all the little details, and the way the hair lies! None of Wheeler's technique here! This is a real dog—though Heaven only knows how he ever got in this state. Just like stone—feel for yourself. Do you suppose there's any strange gas that sometimes comes out of the cave and does this to animal life? We ought to have looked more into the local legends. And if this is a real dog—or was a real dog—then that man inside must be the real thing too."

It was with a good deal of genuine solemnity—almost dread—that we finally crawled on hands and knees through the cave mouth, Ben leading. The narrowness looked hardly three feet, after which the grotto expanded in every direction to form a damp, twilight chamber floored with rubble and detritus. For a time we could make out very little, but as we rose to our feet and strained our eyes we began slowly to descry a recumbent figure amidst the greater darkness ahead. Ben fumbled with his flashlight, but hesitated for a moment before turning it on the prostrate figure. We had little doubt that the stony thing was what had once been a man, and something in the thought unnerved us both.

When Ben at last sent forth the electric beam we saw that the object lay on its side, back toward us. It was clearly of the same material as the dog outside, but was dressed in the mouldering and unpetrified remains of rough sport clothing. Braced as we were for a shock, we approached quite calmly to examine the thing; Ben going around to the other side to glimpse the averted face. Neither could possibly have been prepared for what Ben saw when he flashed the light on those stony features. His cry was wholly excusable, and I could not help echoing it as I leaped to his side and shared the sight. Yet it was nothing hideous or intrinsically terrifying. It was merely a matter of recognition for beyond the least shadow of a doubt this chilly rock figure with its half-frightened, half-bitter expression had at one time been our old acquaintance, Arthur Wheeler.

Some instinct sent us staggering and crawling out of the cave, and down the tangled slope to a point whence we could not see the ominous stone dog. We hardly knew what to think, for our brains were churning with conjections and apprehensions. Ben, who had known Wheeler well, was especially upset; and seemed to be piecing together some threads I had overlooked.

Again and again as we paused on the green slope he repeated "Poor Arthur, poor Arthur!" but not till he muttered the name "Mad Dan" did I recall the trouble into which, according to old Sam Poole, Wheeler had run just before his disappearance. Mad Dan, Ben implied, would doubtless be glad to see what had happened. For a moment it flashed over both of us that the jealous host might have been responsible for the sculptor's presence in this evil cave, but the thought went as quickly as it came.

The thing that puzzled us most was to account for the phenomenon itself. What gaseous emanation or mineral vapor could have wrought this change in so relatively short a time was utterly beyond us. Normal petrification, we know, is a slow chemical replacement process requiring vast ages for completion; yet here were two stone images which had been living things—or at least Wheeler had—only a few weeks before. Conjecture was useless. Clearly, nothing remained but to notify the authorities and let them guess what they might; and yet at the back of Ben's head that notion about Mad Dan still persisted. Anyhow, we clawed our way back to the road, but Ben did not turn toward the village, but looked along upward toward where old Sam had said Dan's cabin lay. It was the second house from the village, the ancient loafer had wheezed, and lay on the left far back from the road in a thick copse of scrub oaks. Before I knew it Ben was dragging me up the sandy highway past a dingy farmstead and into a region of increasing wildness.

It did not occur to me to protest, but I felt a certain sense of mounting menace as the familiar marks of agriculture and civilization grew fewer and fewer. At last the beginning of a narrow, neglected path opened up on our left, while the peaked roof of a squalid, unpainted building showed itself beyond a sickly growth of half-dead trees. This, I knew, must be Mad Dan's cabin; and I wondered that Wheeler had ever chosen so unprepossessing a place for his headquarters. I dreaded to walk up that weedy, uninviting path, but could not lag behind when Ben strode determinedly along and began a vigorous rapping at the rickety, musty-smelling door.

There was no response to the knock, and something in its echoes sent a series of shivers through one. Ben, however, was quite unperturbed; and at once began to circle the house in quest of unlocked windows. The third that he tried—in the rear of the dismal cabin—proved capable of opening, and after a boost and a vigorous spring he was safely inside and helping me after him.

The room in which we landed was full of limestone and granite blocks, chiselling tools and clay models, and we realized at once that it was Wheeler's erst while studio. So far we had not met with any sign of life, but over everything hovered a damnably ominous dusty odor. On our left was an open door evidently leading to a kitchen on the chimney side of the house, and through this Ben started, intent on finding anything he could concerning his friend's last habitat. He was considerably ahead of me when he crossed the threshold, so that I could not see at first what brought him up short and wrung a low cry of horror from his lips.

In another moment, though, I did see—and repeated his cry as instinctively as I had done in the cave. For here in this cabin far from any subterranean depths which could breed strange gases and work strange imitations—were two stony figures which I knew at once were no products of Arthur Wheeler's chisel. In a rude armchair before the fireplace, bound in position by the lash of a long rawhide whip, was the form of a man—unkempt, elderly, and with a look of fathomless horror on its evil, petrified face.

On the floor beside it lay a woman's figure; graceful, and with a face betokening considerable youth and beauty. Its expression seemed to be one of sardonic satisfaction, and near its outflung right hand was a large tin pail, somewhat stained on the inside, as with a darkish sediment.

HAZEL HEALD

CHAPTER II

The Diary of "Mad Dan"

We made no move to approach these inexplicably petrified bodies, nor did we exchange any but the simplest conjectures. That this stony couple had been Mad Dan and his wife we could not well doubt, but how to account for their present condition was another matter. As we looked horrifiedly around we saw the suddenness with which the final development must have come—for everything about is seemed, despite a heavy coating of dust, to have been left in the midst of commonplace household activities.

The only exception to this rule of casualness was on the kitchen table; in whose cleared center, as if to attract attention, lay a thin, battered, blank-book weighted down by a sizable tin funnel. Crossing to read the thing, Ben saw that it was a kind of diary or set of dated entries, written in a somewhat cramped and none too practiced hand. The very first words riveted my attention, and before ten seconds had elapsed he was breathlessly devouring the halting text—I avidly following as I peered over his shoulder. As we read on—moving as we did so into the less loathsome atmosphere of the adjoining room—many obscure things became terribly clear to us, and we trembled with a mixture of complex emotions.

This is what we read—and what the coroner read later on. The public has seen a highly twisted and sensationalized version in the cheap newspapers, but not even that has more than a fraction of the genuine terror which the simple original held for us as we puzzled it out alone in that musty cabin among the wild hills, with two monstrous stone abnormalities lurking in the deathlike silence of the next room. When we had finished Ben pocketed the book with a gesture half of repulsion, and his first words were "Let's get out of here."

Silently and nervously we stumbled to the front of the house, unlocked the door, and began the long tramp back to the village. There were many statements to make and questions to answer in the days that followed, and I do not think that either Ben or I can ever shake off the effects of the whole harrowing experience. Neither can some of the local authorities and city reporters who flocked around—even though they burned a certain book and many papers found in attic boxes, and destroyed considerable apparatus in the deepest part of that sinister hillside cave. But here is the text itself:

"Nov. 5—My name is Daniel Morris. Around here they call me 'Mad Dan' because I believe in powers that nobody else believes in nowadays. When I go up on Thunder Hill to keep the Feast of the Foxes they think I am crazy—all except the back country folks that are afraid of me. They try to stop me from sacrificing the Black Goat at Hallow Eve, and always prevent my doing the Great Rite that would open the gate. They ought to know better, for they know I am a Van Kauran on my mother's side, and anybody this side of the Hudson can tell what the Van Kaurans have handed down. We come from Nicholas Van Kauran, the wizard, who was hanged in Wijtgaart in 1587, and everybody knows he had made the bargain with the Black Man.

"The soldiers never got his Book of Eibon when they burned his house, and his grandson, William Van Kauran, brought it over when he came to Rensselaerwyck and later

crossed the river to Esopus. Ask anybody in Kingston or Hurley about what the William Van Kauran line could do to people that got in their way. Also, ask them if my uncle Hendrick didn't manage to keep hold of the Book of Eibon when they ran him out of town and he went up the river to this place with his family.

"I am writing this—and am going to keep on writing this—because I want people to know the truth after I am gone. Also, I am afraid I shall really go mad if I don't set things down in plain black and white. Everything is going against me, and if it keeps up I shall have to use the secrets in the Book and call in certain Powers. Three months ago that sculptor Arthur Wheeler came to Mountain Top, and they sent him up to me because I am the only man in the place who knows anything except farming, hunting, and fleecing summer boarders. The fellow seemed to be interested in what I had to say, and made a deal to stop here for $13.00 a week with meals. I gave him the back room beside the kitchen for his lumps of stone and his chiseling, and arranged with Nate Williams to tend to his rock blasting and haul his big pieces with a drag and yoke of oxen.

"That was three months ago. Now I know why that cursed son of hell took so quick to the place. It wasn't my talk at all, but the looks of my wife Rose, that is Osborn Chandler's oldest girl. She is sixteen years younger than I am, and is always casting sheep's eyes at the fellows in town. But we always managed to get along fine enough till this dirty rat showed up, even if she did balk at helping me with the Rites on Roodmas and Hallowmass. I can see now that Wheeler is working on her feelings and getting her so fond of him that she hardly looks at me, and I suppose he'll try to elope with her sooner or later.

"But he works slow like all sly, polished dogs, and I've got plenty of time to think up what to do about it. They don't either of them know I suspect anything, but before long they'll both realize it doesn't pay to break up a Van Kauran's home. I promise them plenty of novelty in what I'll do.

"Nov. 25—Thanksgiving Day! That's a pretty good joke! But at that I'll have something to be thankful for when I finish what I've started. No question but that Wheeler is trying to steal my wife. For the time being, though, I'll let him keep on being a star boarder. Got the Book of Eibon down from Uncle Hendrik's old trunk in the attic last week, and am looking up something good which won't require sacrifices that I can't make around here. I want something that'll finish these two sneaking traitors, and at the same time get me into no trouble. If it has a twist of drama in it, so much the better. I've thought of calling in the emanation of Yoth, but that needs a child's blood and I must be careful about the neighbors. The Green Decay looks promising, but that would be a bit unpleasant for me as well as for them. I don't like certain sights and smells.

"Dec. 10—*Eureka!* I've got the very thing at last! Revenge is sweet—and this is the perfect climax! Wheeler, the sculptor—this is too good! Yes, indeed, that damned sneak is going to produce a statue that will sell quicker than any of the things he's been carving these past weeks! A realist, eh? Well—the new statuary won't lack any realism! I found the formula in a manuscript insert opposite page 679 of the Book. From the handwriting I judge it was put there by my great-grandfather Bareut Picterse Van Kauran—the one who disappeared from New Paltz in 1839. *Ia! Shub-niggurath!* The Goat With a Thousand Young!

"To be plain, I've found a way to turn those wretched rats into stone statues. It's absurdly simple, and really depends more on plain chemistry than on the Outer Powers. If I can get hold of the right stuff I can brew a drink that'll pass for home-made wine, and one swig ought to finish any ordinary being short of an elephant. What it amounts to is a kind of petrification infinitely speeded up. Shoots the whole system full of calcium and barium salts and replaces living cells with mineral matter so fast that nothing can stop it. It must have been one of those things my great-grandfather got at the Great Sabbat on Sugar-Loaf in the Catskills. Queer things used to go on there. Seems to me I heard of a man in New Paltz—Squire Hasbrouck—turned to stone or something like that in 1834. He was an enemy of the Van Kauran's. First thing I must do is order the five chemicals I need from Albany and Montreal. Plenty of time later to experiment. When everything is over I'll round up all the statues and sell them as Wheeler's work to pay for his overdue board bill! He always was a realist and an egoist—wouldn't it be natural for him to make a self-portrait in stone, and to use my wife for another model—as indeed he's really been doing for the past fortnight? Trust the dull public not to ask *what quarry* the queer stone came from!

● "Dec. 25—Christmas. Peace on earth, and so forth! Those two swine are goggling at each other as if I didn't exist. They must think I'm deaf, dumb, and blind! Well, the barium sulphate and calcium chloride came from Albany last Thursday, and the acids, catalytics, and instruments are due from Montreal any day now. The mills of the gods—and all that! I'll do the work in Allen's Cave near the lower wood lot, and at the same time will be openly making some wine in the cellar here. There ought to be some excuse for offering a new drink—though it won't take much planning to fool those moonstruck nincompoops. The trouble will be to make Rose take wine, for she pretends not to like it. Any experiments that I make on animals will be down at the cave, and nobody ever thinks of going there in winter. I'll do some woodcutting to account for my time away. A small load or two brought in will keep him off the track.

"Jan. 20—It's harder work than I thought. A lot depends on the exact proportions. The stuff came from Montreal, but I had to send again for some better scales and an acetylene lamp. They're getting curious down at the village. Wish the express office weren't in Steenwyck's store. Am trying various mixtures on the sparrows that drink and bathe in the pool in front of the cave—when it's melted. Sometimes it kills them, but sometimes they fly away. Clearly, I've missed some important reaction. I suppose Rose and that upstart are making the most of my absence—but I can afford to let them. There can be no doubt of my success in the end.

"Feb. 11—Have got it at last! Put a fresh lot in the little pool—which is well melted today—and the first bird that drank toppled over as if he were shot. I picked him up a second later, and he was a perfect piece of stone, down to the smallest claws and feather. Not a muscle changed since he was poised for drinking, so he must have

died the instant any of the stuff got to his stomach. I didn't expect the petrification to come so soon. But a sparrow is a fair test of the way the thing would act with a large animal. I must get something bigger to try it on, for it must be the right strength when I give it to those swine. I guess Rose's dog Rex will do. I'll take him along the next time and say a timber wolf got him. She thinks a lot of him, and I shan't be sorry to give her something to sniffle over before the big reckoning. I must be careful where I keep this book. Rose sometimes pries around in the queerest places.

"Feb. 15—Getting warm! Tried it on Rex and it worked like a charm with only double the strength. I fixed the rock pool and got him to drink. He seemed to know something queer had hit him, for he bristled and growled, but he was a piece of stone before he could turn his head. The solution ought to have been stronger, and for a human being ought to be very much stronger. I think I'm getting the hang of it now, and am about ready for that cur Wheeler. The stuff seems to be tasteless, but to make sure I'll flavor it with the new wine I'm making up at the house. Wish I were surer about the tastelessness, so I could give it to Rose in water without trying to urge wine on her. I'll get the two separately—Wheeler out here and Rose at home. Have just fixed a strong solution and cleared away all strange objects in front of the cave. Rose whimpered like a puppy when I told her a wolf had got Rex, and Wheeler gurgled a lot of sympathy.

"March 1—*Iā R'lyeh!* Praise the Lord Tsathoggua! I've got that son of hell at last! Told him I'd found a new ledge of friable limestone down this way, and he trotted after me like the yellow cur he is! I had the wine-flavored stuff in a bottle on my hip, and he was glad of a swig when we got here. Gulped it down without a wink—and dropped in his tracks before you could count three. But he knows I've had my vengeance, for I made a face at him that he couldn't miss. I saw the look of understanding come into his face as he keeled over. In two minutes he was solid stone.

"I dragged him into the cave and put Rex's figure outside again. That bristling dog shape will help to scare people off. It's getting time for the spring hunters, and besides, there a damned 'lunger' named Jackson in a cabin over the hill who does a lot of snooping around in the snow. I wouldn't want my laboratory and storeroom to be found just yet! When I got home I told Rose that Wheeler had found a telegram at the village summoning him suddenly home. I don't know whether she believed me or not but it doesn't matter. For form's sake, I packed Wheeler's things and took them down the hill, telling her I was going to ship them after him. I put them in the dry well at the abandoned Rapelye place. Now for Rose!

"March 3—Can't get Rose to drink any wine. I hope that stuff is tasteless enough to go unnoticed in water. I tried it in tea and coffee, but it forms a precipitate and can't be used that way. If I use it in water I'll have to cut down the dose and trust to a more gradual action. Mr. and Mrs. Hoog dropped in this noon, and I had hard work keeping the conversation away from Wheeler's departure. It mustn't get around that we say he was called back to New York when everybody at the village knows no telegram came, and that he didn't leave on the bus. Rose is acting damned queer about the whole thing. I'll have to pick a quarrel with her and keep her locked in the attic. The best way is to try to make her drink that doctored wine—and if she does give in, so much the better.

"March 7—Have started in on Rose. She wouldn't drink the wine so I took a whip to her and drove her up in the attic. She'll never come down alive. I pass her a platter of salty bread and salt meat, and a pail of slightly doctored water, twice a day. The salt food ought to make her drink a lot, and it can't be long before the action sets in. I don't like the way she shouts about Wheeler when I'm at the door. The rest of the time she is absolutely silent.

"March 9—It's damned peculiar how slow that stuff is in getting hold of Rose. I'll have to make it stronger—probably she'll never taste it with all the salt I've been feeding her. Well, if it doesn't get her there are plenty of other ways to fall back on. But I would like to carry this neat statue plan through! Went to the cave this morning and all is well there. I sometimes hear Rose's steps on the ceiling overhead, and I think they're getting more and more dragging. The stuff is certainly working, but it's too slow. Not strong enough. From now on I'll rapidly stiffen up the dose.

"March 11—It is very queer. She is still alive and moving. Tuesday night I heard her piggling with a window, so went up and gave her a rawhiding. She acts more sullen than frightened, and her eyes look swollen. But she could never drop to the ground from that height and there's nowhere she could climb down. I have had dreams at night, for her slow, dragging pacing on the floor above gets on my nerves. Sometimes I think she works at the lock of the door.

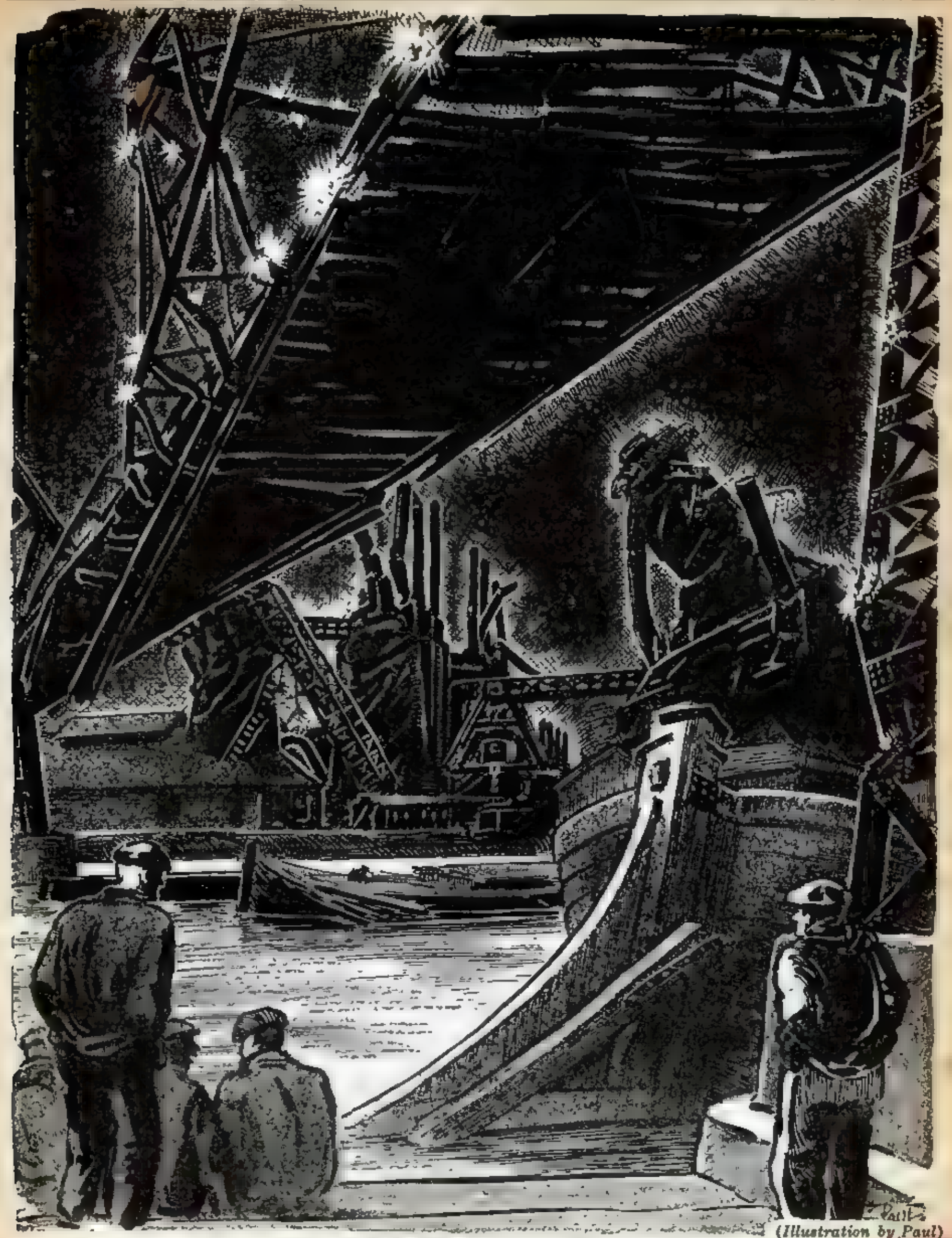
"March 15—Still alive, despite all the strengthening of the dose. There's something queer about it. She crawls now, and doesn't pace very often. But the sound of her crawling is horrible. She rattles the windows, too, and fumbles with the door. I shall have to finish her off with the rawhide if this keeps up. I'm getting very sleepy. Wonder if Rose has got on her guard somehow. But she must be drinking the stuff. This sleepiness is abnormal—I think the strain is telling on me. I'm sleepy . . ."

(Here the cramped handwriting trails out in a vague scrawl, giving place to a note in a firmer, evidently feminine handwriting, indicative of great emotional tension.)

"March 16—4 A. M.—This is added by Rose C. Morris, about to die. Please notify my father, Osborne E. Chandler, Route 2, Mountain Top, N. Y. I have just read what the beast has written. I felt sure he had killed Arthur Wheeler, but did not know how till I read this terrible notebook. Now I know what I escaped. I noticed the water tasted queer, so took none after the first sip. I threw it all out of the window. That one sip has half paralyzed me, but I can still get about. The thirst was terrible, but I ate as little as possible of the salty food and was able to get a little water by setting some old pans and dishes that were up here under places where the roof leaked.

"There were two great rains. I thought he was trying to poison me, though I didn't know what the poison was like. What he has written about himself and me is a lie. We were never happy together and I think I married him only under one of those spells that he was able to lay on people. I guess he hypnotized both my father and me,

(*Concluded on page 470*)



(*Illustration by Paul*)

The rest had become a pile of fallen girders and stone—the dissolving skeleton of a monstrous corpse.

THE DEATH OF IRON

By S. S. HELD

Translated from the French by Fletcher Pratt

CHAPTER VIII

Delirium

● At the foundry after dark one could make out a feeble phosphorescence along the line of the old breakage in the entrails of the corrupt steel: Something like a trickling of water beneath banks of sand was audible, bearing testimony that the work of disorganization was going on.

One morning the steam engine which furnished the power for the lamps and electric furnaces, the only machine that still operated with regularity, presented unmistakable signs of having caught the disease.

The ear of a trained mechanic is seldom deceived. Chouleur, who worked near the engine, modified the position of the regulating valve.

The machine went on with its normal beat, but a little later the pace speeded up. The light in the rooms grew, the danger lights lit up and the rapid movement of the indicating needles disturbed Leclair, who came to see what the trouble was. For some unknown reason the steam pressure was mounting. He saw Chouleur, fumbling feverishly in a tool box and then saw him attack a safety valve with a wrench. Nevertheless electric current, under the mounting pressure escaped, leaping out in a brilliant flaring of the giant carbons in the Herault furnace where the steel was liquified. Through all the interstices, through the refractory joints in the furnace, flames leaped out, illuminating the room and lighting up the face of the astonished electrician.

The automatic circuit-breaker went into action, cutting off the current. Lightened, the steam-engine seemed to bound, speeding up its rhythm to a still more furious pace. The bulbs shone like white stars in the ceiling, along the wall, and the manometers indicated imminent danger. A sudden shock made the ground tremble. Morain was overwhelmed, Raymond undecided. Chouleur worked at his useless task with the jerky motions of a jumping-jack. He ran to the dials again, made a gesture of fear, ran toward the boiler room ladder and shouted an order in a voice become suddenly hoarse.

The engineer had followed him. His dazzled eyes could make out nothing in the black pit where the red rectangle of the fire-box was the only light. All at once there was a terrific explosion, iron sang through the air, a violent whistling filled the place. It seemed to Raymond that the roof blew outward and then fell back amid tearing flames. Struck by some mass that came hurtling through the air, he lay flat on his back.

The factory filled with cries, the screams of men injured by flying pieces of iron. A superheated vapor burned the eyes, corroded the lungs, and a rain of hot cinders plunged through the escaping steam with a strident hissing sound.

When the men came to help him, Leclair opened his

WHAT HAS GONE BEFORE

In the steel foundry of Morain & Co. at Denain, France there is noticed a progressive deterioration of iron and steel as though they have been attacked by some disease. This especially concerns Raymond Leclair and Pierre Selevine, a Russian, two of the Morain engineers. Both men are interested in Renee the wife of their employer.

Several accidents occur in the factory, and the workmen become uneasy and fearful. The engineers are unable to explain the continual weakening of metals and machines. Police search radical organizations for the possibility of sabotage; but find no answer. One of the factory girls, speaking to Leclair, accused Selevine of being behind the strange disease, but she is not believed. But one day Leclair finds Selevine unconscious near one of the machines at a time when the engineer should not have been in the factory. One of the big cranes in the factory falls from its girders killing some of the men. The disease becomes recognized as "the death of iron" and seems to be spreading like a contagion. The steel manufacturers try to use the trouble as an opportunity for a stock market coup.

Attempts are made by Morain to apply remedies to the sick metal, with only partial success. The disease is called Siderosis, and manifests itself by a luminescence of the metals, as though they were radioactive. It spreads throughout France, and everywhere workman are killed by metal parts and machines breaking down.

● This story grows in power as we see the ravages of SIDEROSIS sweep across the world. We have just begun to perceive what might occur to civilization should our metals fail us. Now, Mr. Held, with vivid strokes, draws his picture more and more finely. We see how the disease of metals affects all parts of the population; and the civil wars that will arise for control of the decaying civilization. The story rises and rises in power as it sweeps along with its humor, its adventure and its stark tragedy.

We have learned to place implicit faith in our metals: our lives depend on the fact that steel bridges, elevator cables, girders, train tracks, etc. will perform the function we have always expected from them. But will they always? This is the question that Mr. Held asks, and in his own way he gives a stirring answer.

eyes and found himself on the ground with garments empurpled. The mass which had struck him was the body of Morain, which lay by his side, the stomach torn open. It seemed to him that his life was oozing out with the blood from his torn veins. Inertly, he was lifted onto a stretcher.

* * * *

Leclair opened his eyes again and looked around. The room was lit by the flames from the boiler that had burst. The hole in the roof permitted one to see a dark blue sky filled with little stars like flat points of light without sparkle. He imagined that the stars like pearls, like glowing coals, would die one day. Already they were sick stars. A cold radiation would emanate from the sky whose lights would no more rejoice the eyes of humanity. But on the earth the fire ran here and there, all about. It lifted, found fragments of sheet-iron, on which it fed hungrily, mounting in rounded volutes of a sombre red streaked with yellow, like tiger-lilies.

God! how hot it was! Those tongues of purple were silently eating away the metal. The sweat ran from his temples, bathed his body. His tongue became dry in his mouth. And those flames which leaped here and there and were reflected in the pools of blood became a man with hair of flame, white in the midst of the long brilliant flares. They twisted round his face without even drawing a reflection from his metallic eyes.

Selevine! The image fled. It was night. A little moon, an old moon was burning in the fireplace. "It is only a dream," said Raymond to himself. He tried to reach a carafe of water on the table beside him and upset it.

At the sound of the falling glass the door opened and a young woman came in and gave him something to drink.

"I must get his name at all costs," said Leclair.

"Whose name?"

"The red man, there."

Disturbed, she bent over him, but Leclair had already gone back to sleep.

Again he woke. A grey dawn was filtering through the curtains lighting up a room he immediately recognized. Why had he been brought to Ronceraies? A remembrance of some kind worried him. His mind finally disengaged itself from sleep and found contact with the exterior world. The events of the day before surged into his memory as a series of fragmentary images. A movement aroused a pain in his shoulder. It was not a nightmare then; the explosion of the boiler, Morain injured, his mouth twisted, his fingers contorted with agony.

● Toward the middle of the morning Dr. Levysson came in with various objects necessary for the dressing of wounds. He took the temperature of his patient and declared his progress satisfactory. With the aid of the nurse, he removed and replaced the dressing he had put on the day before. Raymond had multiple contusions, but nothing of gravity. His left arm, broken in two places, was confined in a sling.

"Well! We're going to have you fit as a fiddle in two months," the doctor declared, drawing the bandages tight, "but you'll have to do everything Mademoiselle Claire says. You were extremely lucky, my fine fellow, to get off so easily. Of the three men in the boiler room, you caught the least. The stoker was instantly killed, and Monsieur Morain was frightfully injured by the pieces of iron which would have hit you if he hadn't been standing right in front of you at the moment of the explosion. But we'll pull him through yet unless there are internal lesions. What is your opinion as to the cause of the accident?"

"*Siderosis* must have gotten to the boiler."

"Oh, come. A malady of iron. I was astonished to hear Morain, who is usually so clear-headed, listening to such rot . . . Well, well, these metallurgists, always looking for something new. I went through that imaginative stage in my youth, but in medicine one has to deal with facts, while nobody thinks of a metallurgist as having such a thing as an imagination."

Leclair would have answered, but his loquacious visitor cut him off:

"Keep quiet my boy, you are still too weak to discuss things. You can tell me all about it some other time. Turn your arm a little so I can pin this dressing in place. There! Done!" And he turned to the nurse, "Mademoiselle Claire, you will take his temperature regularly, and don't let him agitate himself. I won't be back till tomorrow; you are not a very interesting case, my dear Raymond.

As though to disprove this assertion, the young man's fever began going up about noon. The pain of the broken arm extended upward to his shoulder. As soon as the doctor left, he had wished to speak to Renée, and the sight of the young matron, wearing on her face the signs of her trouble and fatigue, had depressed him profoundly. She had seated herself beside him, taking his hand in her own icy fingers and bending over him, with the tender flowers of her eyes dampened with tears.

Now he saw those eyes again amid the strange visions that were the product of his fever. He went through the terrible accident once more in his disordered imaginings. It seemed to him that Monsieur Morain came to sit beside him with a thread of blood outlining his waistcoat.

For two days Raymond was delirious, seeing the face of the nurse and the carefully barbered visage of the doctor as though through a fog. Then a noticeable improvement appeared; his temperature dropped and he was able to eat a little. Dr. Levysson told him that Morain, overwhelmed by his injuries, had died the previous evening, in spite of his care.

He left his affairs in a muddled state. The creditors, who had been patient enough up to this time, now came on the run. Leclair imagined Renée without protection in a world of wolves. A flood of energy filled him; he tried to get up and the pain provoked by the effort drew a cry from his lips. The nurse, who came in at once, said:

"You really must be quiet."

"Do you know where Mme. Morain is?"

"She has gone to Douchy with her aunt for the funeral."

Raymond lay back among the pillows. He imagined the cortège passing through the streets lined with workmen, to the old cemetery. Renée in mourning, with tragic eyes in a white face. Without the slightest transition the visage of Selevine, sarcastic and fine, slid into the field of his memory.

He thought of the steel company, brought down by the Blue Evil and of the electrical plant at Machou, menaced by an identical calamity, the result of a commercial transaction in which he had been the prime mover. By reason

of his having used the good offices of his friends, ten thousand tons of rails and tubes forged at the Morain foundries had gone to carry the eighth plague into the Orient.

Certainly, several months before, the manifestations of the Blue Evil had not been clear. One could almost have denied its existence. That ought to reassure even the most meticulous conscience for having yielded to the desire to make a fat commission.

But in the solitude of his room the excitement of his injuries filled him with a series of exaggerated scruples. This state of mind seemed so abnormal to him that he felt his own pulse and discovered that he once more had a fever.

S. S. Held

He recalled the steel and concrete plane where thirteen huge turbines turned to the power of the water-pressure. In a windowed hall the engineers, his one-time comrades, were working. Was that serious little man who sat writing at a table, from time to time glancing up at the dials on a marble panel, doomed to death? Leclair feared it; the only thing which separated him from the back-lash of terrible forces was a thin metal partition. The dynamos turned softly there, the lights burned, the metal glowed, the calculated energy moved along the wires from pylon to pylon toward its distant destinations. In the twilight the wires traced violet lines against the Oriental sky.

He saw himself walking down a lonely road. Beyond El Erg a wide sandy plain extends, the river rolls through a sand sparkling with sunlight and the eye catches a distant glimpse of the falls of Tialla breaking over the walls of basalt which imprison them.

In his mind image followed image without sequence; a horse caparisoned in blue cloth, nude babies, narrow streets, a market where the crowd of bargainers gathered.

And now it was the picture of a young woman, graceful as some beautiful golden fruit. Her smoothly muscled body, her firm breasts and her full lips possessed a certain rare attractiveness.

He could see the stars through the open window. The night had been warm, filled with sweet odors.

. . . The vision filled him with regrets. He forgot the present and Renée, and was drowned in a wave of voluptuous homesickness for the East.

● There was a mass-meeting at Lourches and the assembly room of the old school was jammed to the bursting point with the unemployed.

Under the conditions one need not worry about getting up the next morning and from any point of view a meeting was hardly inferior to the movies as an evening's entertainment.

It was early in the evening and a light fog covered the city. Now and then voices and cries were audible. The clamors would reach a maximum often punctuated by a shot. A band of workmen went by, brandishing coupling bars and singing a revolutionary song.

A month before, the principal factories of the region had been forced to halt all work and to lay off their personnel, and the troubles were increasing.

The Iron Syndicate, subsidized by the Employers' Committee, organized bread-lines, but the staffs broke down under the work. There were disputes which quickly became miniature riots. The jobless went to demonstrate in the city, accusing their former employers of wishing to starve them. They poured around the factories, breaking everything they could lay their hands on out of a sheer spirit of mischief. The effervescence reached Condé, Peruwelz and Mons. Street-cars were halted in the streets and trucks pushed over on their sides. Nevertheless the miners remained calm for the most part, but the workers in the glass, cloth and type-metal industries, after agitated meetings, voted to strike.

The situation became complicated. The heads of the industries showed the most conciliatory spirit in general, but some of them, brought to the verge of ruin by the failure of production, tried to provoke a general lockout.

The demand for iron fell and fell, its value dropped off by a third, but on the other hand, certain alloys advanced in price. Those who had stocks of sound steel showed themselves in no hurry to end a situation which was enriching them.

Unscrupulous dealers threw on the market at low prices, tainted goods whose character had been cleverly camouflaged. In the financial markets of the world came the first skirmishes that were the prelude to the inevitable conflicts. The crisis had come on so rapidly that various interests mixed and clashed in the most confused fashion.

The Labor Federation addressed an appeal to the working classes, setting forth the danger of any precipitate action and counselling patience. The heads of the Federation tried to work out a solution that would conciliate all antagonisms with the aid of the Ministry of Labor, but without reaching any decisive result. All the delays involved only irritated the workmen, and while many, deprived of all means of earning their bread, spent their time in threats and lamentations, others voluntarily walked out of the factories.

The iron-workers had chosen Comrade Laval as their delegate. When he had a few drinks he could talk quite well. The circumstances under which he had been dismissed from Morain's brought him much consideration in labor circles. After repeating it a hundred times he had come to believe he was a victim of the feudal capitalism personified by Morain, that man of prey, that veritable vampire who was fattening on the blood of the people. Such ingenuous figures of speech formed the basic structure of a good many discourses before the comrades, who found in them the very last word in eloquence. He felt doubly deprived when the foundry-master "died on him." It was most inconsiderate, as though the dragon had crawled back in his cave and abandoned the struggle before St. George could strike a blow.

The great topic of his lectures, a whole little industry in itself, which might one day have carried the comrade to

parliament, was thus destroyed. By changing to the past tense, the words of denunciation had lost their force.

From the floor of the great hall the air vitiated by human exhalations, blue with pipe-smoke and the fumes of oil lamps, the gesticulating figure was barely visible. His auditors tried to make out what he was saying.

"We can't hear you!" cried someone.

He raised his voice.

"The iron sickness will destroy the bases on which this iniquitous society rests and will aid our liberation. Comrades, a single movement on your part and the whole rotten structure will come down. The occasion is unparalleled; don't let it go by. We can bring the capitalistic system down at a single blow. Those who are advising you to wait are the tools of the manufacturers. The Federation wishes to temporize. It is the timid and traitorous tactics of the bourgeoisie. They are preparing to strangle the working classes. Morain and his consorts were at the head of this movement. I knew him. I know the things he was capable of. Don't give our enemies time to organize. Declare a general strike now!"

He halted. He had recognized a well-known figure in the hall.

"I announce to you the presence of two spies from the manufacturers' committee," he cried, and his finger pointed toward Leclair and Barrois, the former smiling, the latter a little pale at this singling out. There were exclamations and a long whistle, but the president of the meeting intervened.

"We announced an open meeting and these gentlemen are perfectly free to come here and speak if they like. By respecting their presence we will demonstrate to those who sent them how workmen conscious of their rights and dignities behave themselves."

CHAPTER IX

Into the Mine

● There was applause. A remark from Laval woke the crowd's sense of humor. Low jokes rained around these sons of the upper classes in their stiff collars. But there was a diversion from without and a general rush toward the door as the lugubrious sound of the fire-engines was heard.

"Another one!" exclaimed Barrois. "That makes eight in a week. Well, that's more than a little over the average. Inexplicable! At least—" he looked about him—"at least if chance has not been aided slightly. But look, it's the gas-works." And urged on by that curiosity which always draws human beings toward accidents, he hastened his steps, pulling Leclair along after him.

There was assuredly much activity in the street; men dashed to and fro carrying lanterns.

A light broke out somewhere. The three big gas tanks loomed up, huge and squat. From one of them a long tongue of flame escaped to run across the top, joining with another one and illumining all the surroundings.

Buildings shot out clearly from the shadows and seemed to recoil before the invading light. The factory, the slag-piles, the casting channels, stood out precisely.

Through invisible cracks the flames drew forces that increased their strength. They mounted rapidly; streaked with yellow and purple, turning in huge spirals, floating here and there like the movement of draperies. The roofs of the tanks curled and spotted; the steel-work reddened and then melted. From a great distance one could still feel the furnace-like breath of the blaze. Called in haste from their nearby barracks, the soldiers pushed back the crowd.

The affair took on a certain wild grandeur. A twisting column of flame, thirty feet tall, a mushroom of smoke with bloody reflections, lifted above the burning reservoir like a gigantic torch.

The firemen after a brief and fruitless effort, had given up hope of mastering it. A black cloud, filled with golden streaks, covered the place, and its soft ramifications, filtering upward into space, fell back slowly like a snowstorm. Sometimes, as though torn by internal forces, this cloud heaved up in the center and the invisible crater vomited new columns of fire.

The people of the neighborhood were warned to get their goods out of their houses.

"Are we going back?" asked Leclair impatiently.

Barrois had taken him by the arm.

"As a matter of fact," he said, "no one has realized the gravity of the situation yet. In the Department du Nord there are already a hundred thousand unemployed. Why are they delaying their transport to regions where conditions are not so bad?"

Leclair did not care to know. He listened idly to his companion, finding his remarks full of good sense, but more than a little boresome. Nothing could really endanger his faith in his own future, the only thing in which he any longer had any faith. He was still lost in the happy astonishment of his victory, which he had never believed would come so promptly.

In the affliction of her recent bereavement, Mme. Morain had wished to delay his advances, recoiling from what other people would think; even Leclair himself had wished to temporize, but circumstances had decided otherwise. The animal instincts control us in curious ways and they had yielded to them at the very moment when they were rendering a proper respect to the dead. The thought of him whose memory they wished to respect had brought them together. Tears are very close to affection and the road of consolation is slippery. Once he tries to tread on it, no mans knows where it will take him.

Leclair had undertaken the more delicate business affairs of his late employer, and in his preoccupation had, so to speak, not had time to organize his emotions. His new position opened many possibilities for him, possibilities which, by a kind of modesty, he did not wish to envisage in all their completeness, but possibilities which reinforced his feeling of optimism.

He smiled, remembering the slightly frightened air of his companion, surrounded by the dull workmen and their children. Then a sudden thought made him pull out his watch. It was late; and Barrois' discourse showed no signs of reaching its end.

"Day before yesterday," he was saying, "Renaud delivered a lecture on the iron sickness, and asked that a national subscription be opened to check its advance. Would you believe it—there were only about twenty present. The lack of curiosity of the Parisian public about everything that does not directly concern its interests or its pleasures is really something stupefying. If they were only merely indifferent! But the socialists are

openly rejoicing at the spread of the *Siderosis*, which is hitting the capitalists first.

"Do you know the curé at Douchy? He is an old man, much respected by all the workmen. I was talking with him recently.

" 'God wished,' he said, 'to punish the cities from which He was being driven out, and He has touched with His avenging finger their proud monuments. Monsieur, you will live to see their last vestiges disappear. That vain idol of science which has turned man from his true destiny will fall.'

"I told him that he ought not to condemn the noble effort of man in conquering nature and forcing it to provide the means for enlarging his field of thought. But he shook his head:

" 'No! No!' he said, 'these conquests serve nothing but the needs of the body. They bring no food to the soul. It is by spiritual means that one arrives at happiness and truth. Beyond this there is no true health.'

"I am not a believer myself," added Barrois, "but I appreciate the benefits of religion. The people would suffer from a premature mental agitation without it, and would replace the beautiful legends with utilitarian precepts which would be deceptive as they would not supply the popular need of ideals."

● Leclair repressed a yawn. He hesitated a moment, searching for some pretext for flight, then deciding, remarked about the pain in his arm, still not completely knit.

As a precaution he turned toward his own street first, then making a circuit, headed for Ronceraies.

Morain's housekeeper, Miss Buick, an old maiden lady afflicted with genuine English acne, received him with the utmost cordiality. She was occupied in sewing on some garment while Renée was reading in the golden circle of light cast by a table-lamp.

He waited a moment at the door, hardly daring to break in on the silence, and finding the charm of this intimacy doubly pleasing after the turbulence of the streets. At the slight odor of iris in the room the beating of his heart increased.

The young woman, who had been waiting for him, reproached him with leaving her alone in the solitary house. In spite of her smile a trace of genuine fear lurked in her eyes.

He tried to draw her to him.

"Dear Renée, every hour away from you is like a penance."

She halted his gesture and placed a finger on his lips.

They passed into the salon. Candles were burning down in an antique candelabrum, lighting up polished bronze and marble.

As Mme. Morain received a good many callers during the course of the day they had agreed to keep up appearances by having him call on her only late in the evening. It followed that Raymond would tell her how he had spent his day.

"I was with Barrois when I felt the need of coming to see you. It was altogether irresistible. I left him quickly without even shaking hands with him. The poor man must think I'm a little cracked since my accident. I took him to the mass-meeting, where we were recognized. He was really quite frightened."

He laughed over the memory. His little, fine teeth shone under his well-designed lips. Mme. Morain admired his youth, his gaiety. She drew him closer to her.

"What have you decided to do?"

"Oh, we'll have to leave. As soon as I have realized on the stocks at Aulnoy."

"Oh, let's! Let's get away from the Nord, leave this unhappy city. I would so like to forget. I need calm and repose."

There were many things to disturb her there. Creditors, lawyers, trying to get this or that from her, pursued her ceaselessly. She complained of the attention of Camus. That chubby personality was paying his court to her and at the same time demanding payment on unfulfilled contracts. Couldn't she somehow make him understand that his presence annoyed her?

Leclair's face took on a little frown.

"No, it's impossible now!" Since she had left her interests in his hands she must let him make the arrangements. Camus was a pig, but an influential pig whom it was necessary to avoid antagonizing.

Mme. Morain, who had spoken only to have something to speak about, was pained to see him again buried in the habitual preoccupations. He was busy with a dozen projects, fishing in the troubled waters of finance. The stocks of Duro-Fer which he had counted on as his, and which were now frozen by the seals of the baliff, seemed to hypnotize him. He was in a reverie, forgetful of the sweet presence beside him. She sighed. He perceived his mistake and turned to her once more. His lips caressed her bare arms, her lips. The young woman pushed him away after a moment, and he thought she was annoyed, but saw her cross to the door and turn the key . . .

The reason why a new outbreak of accidents from the rotting steels occurred at this time was generally unknown or misunderstood. Many scientific minds refused to admit the possibility of a mineral malady, and hunted for explanations in the arsenal of classical formulas and molecular physics.

Others completely denied what they could not understand. An American scientist affirmed that they were in the presence of a case of collective suggestion. This hypothesis found resolute partisans in France.

Nevertheless, the Bureau of Tests, issuing from its prudent reserve, sent the first commission of research into the devastated regions. Renaud published the results of his researches on *Siderosis* in the mines. The general public began to be interested in the question. A popular song, "He can't see nothing but blue" was launched in Paris and enjoyed a wild success.

Renaud, a physician who studied astronomy as a side line, curious about everything, had followed the work of Morain with some interest. Renaud was well known in society and wrote a good deal for popular papers. His articles described such subjects as the immensity of sidereal space and the Einstein theory of time in a form not too difficult for untechnical minds to follow, and tied up these concepts to ideas of the most ordinary, or rather the most Parisian, character. The vanity of human affairs made a strange contrast to the immensity of the universe in his works, but nobody seemed to mind. The amiable thinker had a fine talent for publicity. The bankers of the city as they rode through the subways in the morning, absorbed diverse facts, faintly perfumed with philosophy, and the combination gave them a flattering sense of their own importance. It is not bad from time

to time, to cast a glance at the end of existence and man's littleness in the infinite universe. After all man is a thinking animal; they taught us as much in college.

● A great daily paper hired Renaud to study the action of the sick metals on the human body, and he left to explore the iron mines at Fontoy, where the *Sideronis* had struck with especial vigor.

These deposits, situated to the west of Thionville, are formed primarily of a hydrated hematite with phosphate intermixtures.

Mining operations had once taken place on the surface but were now subterranean, and for several years the hills of Andin had been tunneled by superimposed systems of galleries. As a result of the breakdown of the pumping systems, most of the mines had been inundated, but even before they had become utterly unworkable the miners had fled from the radiations of the minerals.

The skins of those who had remained at work became covered with little sores which burst and peeled like small blistering burns. Surface ulcers formed and scarred over and the skin was colored a bluish purple by the action of the radioactive minerals.

"Care must be used," Renaud wrote, "I'm going down into the mines, because of the destruction of the ladders, the infiltrations of water and the possibility of falling roofs. It was not without difficulty that I persuaded two miners to accompany me. The cages were not in operation, of course, and it was by a series of narrow emergency passages that we penetrated to the heart of the mine, six hundred feet below the surface.

"Everywhere the traces of hasty abandonment were visible. The ground was piled with debris, with little trucks on their broken rails. Mining machines, picks, and broken shovels were mixed with clay and minerals fallen from the sides and ceilings.

"These pieces of iron which had been formed by the hand of man had become porous and gave off a cold light of their own, and seemed, under the scales of rust, to burn with a cold fire. Some had already collapsed into cinders and others, in appearance intact, caved in like rotten fruit under the slightest shock. There was a sound of dripping water and a subdued roar as though the earth were burning slowly within itself.

"We arrived before an underground lake, surrounded by sulphurous ores. In the depths of the mother waters the patient forces of nature had given birth to delicate crystalline designs. Strange flora! The petrified lines had a harmonious equilbrium. One hardly knew whether the material were dead or alive: the abandoned residue of some accomplished task or life seeking a new and superior form. The light of the torches showed the place in all its strangeness and picked out the rhythmically dripping drops of water. Here and there shining rhomboids stood out, stalactites amid the purple rocks, with a splendor at once massive and barbarous.

"The further we descended into this place ravaged by fire and water, the greater the brilliance grew. Our shoes crushed piles of snowflake-like designs and the pressure of a hand against a wall was sufficient to bring out a series of ephemeral lights. They slept a leaden sleep beneath the water-pools, but a stone tossed into the pool would wake them all, and pale, irised reflections, cold flares, would run across the surface. These marvels held my attention so that I hardly felt the fatigues of the terrible march, on which it was necessary at every instant to turn aside to avoid some enormous boulder, to step across a pool, duck under a projection from the ceiling or ford the subterranean ravine of an underground river.

"Looking upward, I saw that the gallery became higher and higher, issuing into a kind of grotto hollowed out of the ferruginous mass. Through the lukewarm mist which filled the place, one could barely make out the huge dome, encrusted with tiny precious stones, from which milk-white drops occasionally detached themselves. In a breath of vapor the torches flared and smoked. When they were extinguished an unexpected light was visible, a light secreted by the atmosphere itself. It is difficult to give an exact idea of its character. It was made up of an obscurity and a light in some odd way interacting, a night like those of the polar regions when all the auroras are awake, calm and sinister, with an illumination that seems to come from behind the earth.

"We looked at each other with dark eyes and uneasy faces across these thousand subtle flakes of light which were the product of that inexplicable fever. Everything seemed unreal, possessed by spirits hostile to our intrusion. It seemed to me that I was violating the sanctuary where Nature was celebrating one of her mysteries. My hand trembled a little as I relit the torches. The light drove the remains of the shadows to the furthest corner.

"Ill at ease, disconcerted with my own feebleness, I breathed with difficulty the humid air, poisoned by the same pestilence. The reason for the feeling became apparent as we stumbled on the carcase of a horse which barred the course of a rivulet. Its frightful thinness indicated that it had been abandoned living in the mine. A multitude of dead rats, their white bellies in the air, strewed the ground around it.

"As I examined the little corpses, the sound of a shattered crystal suddenly attracted our attention. My stupefaction can be imagined on discovering, in a kind of niche, a man occupied at a task altogether incomprehensible. A tripod loaded with various instruments stood by his side. The feeble light of a fagot showed his bald head and accentuated the lines of an old, ivory-colored face. He had the appearance of a Japanese devil, of a metallurgist gnome. He looked up with surprise at hearing us, and without giving me time to speak, said, with a strong English accent:

" 'Look out, there are wires along there. Turn there and walk carefully. Watch out!' He held a photographic plate before the light.

● "I did not wish to question him while he was busy and waited. It was a long wait. The two men who accompanied me were becoming impatient when he came over to where I stood.

" 'I am Austin,' he said, 'of the Royal Institute.'

"And when I presented myself, he added:

" 'I am just finishing my work; important work. This malady of iron interests you, too?'

" 'Certainly.'

" 'And you don't know the worst of it yet. I say this: there is going to be a prodigious upset, not in our century, but during our lives. You will see. If I told you—by the way, I am very glad to have met you, Dr. Renaud.'

"He had taken me familiarly by the arm and began to

tell me about his theories. The moment was hardly well chosen. I asked myself whether he had lost his mind or I mine, for his ideas seemed absolutely incoherent to me. (Pardon me when you see this, Austin, old fellow.) But I received the impression of a flow of words for which their author was no more responsible than a man in a delirium. My scientific friend was as well aware of this impression as I. I imagine that he himself was not in quite a normal state, although he insisted he was. Nevertheless he seemed over-excited, breathing too fast, and his eyes burned behind enormous leaded glasses. A magnificent enthusiasm galvanized his thin and feeble body. I perceived that his left arm was bandaged, hung limp at his side and that there was a bleeding wound below his collar.

" 'Where does that come from?' I asked.

" 'Radiations from the mineral. There is a definite projection of finely divided matter and an emission of waves. The latter are the more dangerous. Look—the walls are lukewarm. The iron is decaying rapidly and its internal energy is escaping on every side.'

"He remained thoughtful for a moment, his eyes half-closed behind their huge-glasses and his finger pointed to a gangrening mass.

" 'Those aggregates of matter are returning to nothingness.'

"An idea occurred to me. 'Why is it necessary to believe in a destruction?' I asked. 'The mineral might be evolving into a new form of equilibrium like a living being.'

"Austin seemed surprised.

" 'Death does not exist,' I continued. 'It is one of the changes of life and life is everywhere. It preexisted in the globe while that globe was still in a state of fusion and remained here, taking new forms with new circumstances. It sleeps in metal and crystal, latent and unreachable. And under other conditions, other forms of life should have risen.'

" 'But—'

"The truth suddenly came home to me with dazzling brilliance.

" 'Man, working with iron for thousands of years, has permitted unknown forces to develop in the metal itself. This is the fruit of his labor and what a monstrous product it is! What do you say, Austin? There is no Blue Evil, only a mutation of the ferro-carbonic species.' "

CHAPTER X

Decay

● Six months after the death of Morain there remained of his foundries only the wreckage of two hulls. The rest had become a mound of fallen girders and stones. Long ossicles of iron projected from the tangled mass of bricks and concrete, the dissolving skeleton of the monstrous corpse on which the elements were now finishing their work of destruction.

A vague curiosity drew Selevine to the field where matter was suffering and dying. He tried, one day, to work his way into the bay where the contagion had become manifest for the first time. There, beneath the staggering roof, he was struck dumb by the tormented forms which still held a little of the aspect of the machines they had once been. Now they had become greying blocks starred with phosphorescent spots, swelling with pustules and knots—the final form of the disease.

The plates were bending and curling like autumn leaves. Bars were tortured into spirals. Inextricable twistings suggested the appearance of living plants, of groups of algae or black roots twisted out of the earth by some force of their own. The slag heaps were covered with the windings of horrible ring-worms and ulcers had broken out on all the piles of unused ore under the force of the internal decay.

Invading the enfeebled organs of the machines a flora of death was achieving the work of destruction it had begun.

There were certain places, like spongy ashes, where some unknown form of lichen detached itself and fell at the visitor's tread. One trod into the ground, dry, dead things that cracked like old twigs, squashed lukewarm fermentations into the earth as one walked. Further on the rain had leached out the remains into a thick, soup-like pool up through which nettles and other quick-growing plants were pushing to cover the ruins with a verdant tapestry. Like blind worms the living roots of the plants searched for their nourishment in this soil of whose conquest they were now assured.

"Iron is returning to the maternal earth," thought Selevine, "but is it still iron?—this powder whose residue crumbles in the hand to be borne away by the wind like the pollen of some plant?"

The circumstances through which these phenomena had shown themselves returned to the engineer's memory. A reminiscence, an image situated on the borders of memory, became clearer. Suddenly he recalled the appearance of the meteorite Fontaine had given him a year before, a fragment of lava scintillating with strange blue lights. It had the same appearance as the sick steels in the last stages of their decomposition.

The truth he had felt for a long time became clear in his mind—*the origin of the Siderosis was extra-terrestrial!*

An emotion invaded him. The revelation struck him with an almost physical impact. "Crucibles of fire, the shock of stars, tornadoes in the taciturn depths of space . . . and look at the result of these titanic efforts—a calcined stone, containing, like a funeral urn, the germs of death."

He thought of the feebleness of man, once the master of all forces and king of the earth—thanks to the machines he had conceived. "Nothing has halted his serene ascension up to the present time, and it took so small a thing . . . O! Unknown Power, man in his infancy still demands help from you! Show him the way around the too-difficult obstacles! Let him ascend once more!" And the frightful problem of what would happen if all matter, the substance upon which the precious forces of life depend for existence, should suddenly give way, presented itself to his mind.

Since the period when the liquefied bronze ran from the crucibles of stone for the first time, man had forced the metals to bend themselves to his will, had bent their forms into those his genius had invented. Conjured from their hiding places, rendered supple and strong, altered in aspect and substance, they had armed his hands with powerful claws, interposing between his tender body and the hardness of the universe, opening new perspectives to his activity.

A world of beings, whipped into obedience by his obstinate efforts, seconded the labors of their tamer and had become a necessity of his existence—the great ferrocarbon species, drawn from the abysses where they slumbered.

And now upon the crystallizations man had made, others he had been unable to forsee imposed themselves. In a few short hours, all the slow, patient labors, all the ancestral heritage, all the human patrimony was being destroyed. Like a body without a skeleton, human civilization would collapse.

Already all the neighboring regions had had a foretaste of the impending destruction.

In Belgium and Lorraine the tall furnaces were rusting; the forges of Ongres, the factories of Ravange,, Joeuf and Moyeuvre, were completely destroyed. The damage had reached the Luxembourg mines and the Rhineland deposits, where the importation of French irons had been forbidden too late. The steel works of Longwy were dumb; those of Commentry, Fourchambault and St. Etienne starved for lack of ore. The metal marts of the Saar, the ports of the Ruhr, all slept, and the flotillas of steamers which carried the iron and oil to Belgium and Holland lay moored at their wharves side by side.

● A forest of masts with their foliage of cords; dredges and tugs lifted their silhouettes against the Westphalian sky which they had once blackened with their smoke. Essen was a cemetery, where one saw nothing but ruins; silent mills, freight cars rusted to their rails, locomotives of brass and steel silent beneath coats of rust. Shadows lengthened along the silent waters. At Ruhrort the warships slowly dissolved in their basins. The heavy waters carried a foam of rust down to boil against the bridge-piers.

The canal of Thyn was powdered with rotting iron that drifted down from a decaying bridge. A red line of rust ran along the columns of steel and made the delicate tracery look like an autumn tree. About it several houses cracked apart to show their iron skeletons failing amid the crumbling stone. Sometimes amid these ruins some piece of construction, some tower with elegant clean lines remained intact, for a strange capricousness characterized the workings of the Blue Evil. Infallibly it introduced itself into the most hermetically-sealed vaults but by the most unlikely means; a filing was enough to start the most irreparable catastrophe. It stagnated at the bottoms of mines, filtered slowly into the cities, galloped rapidly along the railroads, sowing ruin and death in its path.

Toward the month of September all machine traffic with the north and east of France became irregular. Combustibles were not to be had at any price, and all public lighting was discontinued in Roubaix and Valenciennes. Only in the railroad stations did a few agonized flares burn to show the sad disorder of everything around them; accumulated goods of every kind, materials falling to pieces, cars immobile and rotting. Touched in their most vital parts, all their most delicate mechanism broken, the railroad services were at the end of their resources. Misery brooded over France.

The collapse of the markets, the growing and general unemployment, the distress of the laboring classes without means and without bread placed before the government agonizing problems which it sought in vain to solve. As events progressed Deputy Lebon came out of the shadows where his ambition had cast him, and by a series of intelligent suggestions, captured popular favor. Designated for a post in the next ministry to be formed, he demonstrated his zeal in a hundred ways, ran all about the north of France, assisted at the sittings of numerous committees, presided at the Union Valentinoise, made speeches everywhere and in a single phrase summed up the idea that was in everyone's thoughts—"The urgency of the situation demands energetic measures."

His promises to do something about it began to be borne out when his brother-in-law, manager of the Chiers factory, received from the government an order for five million francs' worth of arms and armor plate. Nevertheless, the Chiers establishment, hard hit by the general depression of November, went down in the failure of the General Metals combine, precipitating a financial scandal in which the new minister, betrayed by his colleagues, saw the finish of a political career which might have become extremely useful. About the same time the Fonds de la Noue company was bought out by a German firm and the Department of Mines entered a patriotic program designed to sustain the working classes through their difficulties.

Under the pressure of public opinion, the Chamber voted new laws against speculation.

They failed to touch the magnates who were engaged in the combat for the coal and iron industries. There were several suicides. On all sides French values fell off on the foreign exchanges. The money market became the scene of frenzied speculation. Banks began to take measures to protect themselves against the possibility of riots.

The amplitude of these troubles upset foreign exchanges. At first commanding high prices in world markets, American and German steels began to feel the influence of the general depression. Tariffs boosted to the skies killed off all hope of profitable operations. A universal distrust caused buying to fall off. All industries were menaced.

It was at this time that the steel magnates of the Rhine laid the foundations of an international understanding. It was necessary for all steel men to ally themselves against the common enemy. After some hesitation, Pittsburgh and London joined the Cartel. Important firms rallied around it. The Steel Trust, the great railroads, set optimistic rumors afloat and their agents, by a series of careful maneuvers, succeeded in halting the fall in values. The declaration of sick stocks of iron and their destruction became obligatory. Innumerable fires of destruction were lit throughout the world. Suspected ships had to submit to quarantine and all merchandise was verified at the frontiers.

A consortium of bankers took things in hand at Denain and forced some of the damaged factories to a new vitality. The workers of the region and specialists from every country in the world were called in. Technicians, with an enthusiasm aroused by the promise of huge rewards, attacked the problem of the contagion directly.

There was, after a period of disorder, a fever of work.

Iron work was replaced by wooden beaming; machines and cables received hourly inspections with the assistance of newly invented apparatus. Concrete props sustained the weakening roofs. Steel was purified in the tall furnaces of Longwy and then sent to the forges of St. Dizier and Creusot.

Hammers beat the burning masses, rolling mills flattened them with fervor, cold water seized on them with a

strident hissing. They circulated through the forge-shops, turning to heavy ingots with depths of purple light.

Cooled beneath their igneous crusts, the virgin iron and fresh copper were encased in sheets of lead. Loaded barges and tugs plowed the Meuse and Escaut in long lines

● In the railroad centers the movement of life commenced again, the broken communications were made good, the cables were restored, the infected parts carried away, and the cars which had rusted to their rails, resting like regiments of ants around a sugar-heap, moved with a plaintive rhythm. The locomotives whistled once more as inspectors pounded their sounding wheels. Orders and shouts mingled with the clang of bells behind windows. The struggle was carried on above and below the earth.

Men broke down under superhuman efforts, and all the elements seemed to avenge themselves on their shattered bodies. An explosion would take place, with singing jets of steam and the sough of murderous fragments. With a sad noise, the water broke from enfeebled conduits, slipped around the viscous earth and bubbled at the feet of men dead with fatigue. One saw them staggering through the streets, overwhelmed with effort. They cried in raucous voices, made convulsive gestures, stopped and fell down in the savage effort of the combat.

Toward evening flares threw cones of light into the dusty air, and long shadows moved across the ground lined with steel. From a distance the beating of hammers, the shrill blasting of whistles, the trembling monotones of motors were audible. Black silhouettes loomed amid the squat forms of the monsters. A desperate struggle of intelligence against unwilling matter, intelligence which would win in—the millennial end. To retain its empire over the world, humanity, mutilating itself, devoted a part of its body to invented hells.

But outside these islands of activity was night and silence. The countryside stretched away in loneliness. Sometimes a train moved across the horizon to halt before agitated signals, a bell would ring and while the crew stood along the right of way, some express-train on a through line would whirl past, its smokestack crowned with stars and its luminous windows hurling bars of light across the darkness. Freight trains loaded with goods went jolting by; others brought soldiers to repress the strikes.

Pressing against the windows they looked out with sleepy eyes onto a countryside tormented with coal-dust and clinkers, a station with a smoking chimney—brief visions whirled past as though in a nightmare, twisted electrical pylons, broken signals, hanging cables, open ditches, horses toiling under the lash, and along the edge of the river, the cities devoured by the unknown malady—Denain, Anzin, Valenciennes, the latter toiling to repair its iron bridge in funereal marble.

The steel vibrated to the shocks of the wheels, the plates resounded with the deafening uproar. No one dared to think of the consequences of an accident, of an enfeebled rail or a wheel suddenly blocked. Anxiety was in every heart. So much the worse, then! Man, carried along by the tumult he had created was unable either to stop or go back. He must follow the path right through to whatever destination it led. Already the trains had passed and where the flying pebbles marked their passage the workmen continued their labors.

Their task was facilitated by the establishment of emergency electrical lines. From the generating plants at Lille torrents of energy flowed down the cables. A thousand bulbs lit up in the factories and yards. With cries of joy the inhabitants saw the familiar stars of their nights reborn.

Electricity was, nevertheless, distributed thriftily. In spite of all precautions, the generating mechanisms that had once been touched by the *Siderosis* did not work well, even after repairing. The dynamos moved irregularly, there was a progressive decline in production. Their parts in mild steel and copper became overheated. The transformers clattered in their oil baths and acrid vapors formed about them; a quick fire devoured paints and lacquers, and the rotors, taking fire from a spark, would form fiery torques from which tails of smoke arose amid a rattling of sounds.

After several ineffectual efforts, the engineers gave up trying to use the electrical machinery of the region. Every night the shadows encroached a few more steps.

Only the saloons punctuated the night with attractive lights. Leaving their factories, the workmen found in these airless rooms rendered stuffy by the smoke of bad tobacco, the cherished habits, the familiar vices without which life is no more than a monotonous torment. The sharp beer foamed into their glasses to be left standing. They drank gin, they played cards, they watched cock-fights on tables cleared off for the purpose and bet a week's wages on the result. Placid, jocular Belgians were prominent among them. Foremen, dressed to the minute, swallowed costly cocktails. Synthetic blondes sold their well-worn bodies. The raucous or sonorous syllables of a dozen different dialects mingled.

CHAPTER XI

The Coming of Revolt

● A whole heterogeneous population, attracted by the hope of high wages and in a vague way, by enormous illegitimate profits, had invaded Valenciennes, where the Reconstruction Committee had its headquarters. Italians and Spaniards with their little black moustaches, Belgians, Luxemburgers and Lorrainers; peasants from the upper Rhine, strong and placid as so many cows. There were others who came from more distant countries, brought in by the committee which was looking for cheap labor anywhere, without in the least worrying about the effect of these importations on the labor of their own country.

Moroccans, in slippers, Slovaks, and vague Poles with fuzzy hats; skinny faces, cheeks with folds of flesh, alert eyes, sometimes brilliant with fever. It was difficult to get along with them. Brawls were frequent. Driven into corners among the tables, they would look about for a means of escape and fumble in their pockets before rolling on the ground with bloodied faces.

The unemployed and the strikers avoided mixing with this floating labor and assembled at Raismes by preference.

Super-excited with alcohol, their cries and songs in the streets would wake the shop-keepers, who trembled behind their barricaded windows. The pillage of the factories had become a veritable industry; the more advanced papers even encouraged such robberies. "It is a right for the famished people," they proclaimed, "a kind of reprisal against the profiteers."

One morning at one of the shops two watchmen were found dead, their throats slit. The chief of police increased the number of gendarmes. Army reservists made nocturnal rounds, but as there were so few of them they could stop neither the pillaging in which half the population was engaged nor the work of destruction the unemployed were doing. The Arenberg mine, whose pits were near the surface, served as a refuge to all the undesirables of the district. The ladders in the galleries had been cut and the cages were no longer in operation. Wholesale raids and arrests aroused a feeling of uneasiness in the population.

The gendarmes were clumsy and often brutal. When they went by on horseback through the narrow streets, squeezing the pedestrians against the walls, the women, certain of their immunity, hurled insults at them. Stones flew through the air; a horse, hit, would rear. The man who did it was always lost in the crowd; when the gendarmes tried to catch him they ran into a kind of dumb opposition, were pushed this way and that and little by little were separated and surrounded by hostile groups.

These incidents multiplied. In all the coal pits the workers were agitated. Those who had approached too near the sick irons bore on face or arms the scaly traces and empurpled ulcers of the radiodermic action. These superficial traces were sufficiently painful to spoil the sleep and sap the energy of the sufferers, and on them disorder seemed to produce an intoxication like that of alcohol.

The railroad uniting Valenciennes to Tournai was cut. For a hundred kilometers the trains could not move.

In spite of trucking services that were at once organized, the supply of food became insufficient; the newspapers appeared only intermittently, the relief organizations were swamped and a mortal languor gripped the cities that were only yesterday so filled with life.

Several businessmen without scruples began to speculate in food. This was the basic reason behind the bloody days of January.

Men struggled desperately with the Blue Evil, and their creative energies seemed to strike an equilibrium with the forces of destruction for a moment. Then the plague began to gain once more. There was a period of dread, the calm which precedes the tempest. Then came a time in which the malady of iron was almost forgotten in the social conflicts which it indirectly provoked. In all France the disorders became worse as hate and despair gripped the unemployed.

They passed through the streets, assembling before the notices which the government had everywhere plastered on the walls. Words, unrealizable promises, renewed assurances of a change of conditions were proclaimed. All about them they felt an ocean of ignorance and indifference.

Paris remained calm. There were several murders of course, and a few stupendous robberies, but these ordinary events were not the general rule. From time to time grave accidents betrayed the fact that the Blue Evil was still working in the heart of inert things. The fall of the Eiffel Tower, which had been constructed in an age of great metallurgical advance, the collapse of the subways, provoked nothing but a little mild conversation. Human sensitiveness became hardened to stories of violent death.

The meetings of the International Iron Cartel had drawn a crowd of foreigners to the capital. The devalorization of money gave a temporary stimulus to business. Stores, theatres and night clubs joined in a remarkable and unexpected prosperity. If the country were becoming poorer the merchants speculating in exchange and food products benefited by the difference between the actual prices of articles and the salaries paid in paper, and rapidly amassed fortunes.

● The people accused them of being insatiable. But how else could they accumulate the capital which would enable them to speed up production and thus aid the masses? At least this was the question which most economists put. To despoil them was to bring ruin on the thousands to whom they gave employment. Money obeys strict laws. It circulates like the blood in the veins, carrying with it life and well-being before returning to the source from which it has issued. If the movement ceases for a single day, society will perish in agony.

This possibility seemed still far distant. The Bourse was as crowded as in its palmiest days, with an active crowd from which arose cries of financial distress. The bankers—the last of the mystics—disdaining all creative efforts, played with arbitrary signs and embraced a gilded shadow. Prostitution developed apace, and the daughters of miners, of the famished bourgeoisie, of the unemployed, and a few rich girls who entered the business for their own amusement, disputed their salaries with the professionals. If love was still mentioned in books and on the stage, it had in fact been replaced by vice, whose marketable value is more readily determinable. Among all ranks of life a desire to play became manifest. Even the most prominent people, whose integrity had made them public examples of good conduct up to the present, found themselves victims of terrific scandals upon which the public gorged itself with a morbid appetite.

Thus did business, pleasure, care and misery mingle in the proportions necessary to the life of a great city.

Three enormous balls and a benefit performance at the Opera were organized for the benefit of those without work, and the memory of the chronicler does not recall any more elegant exhibition of costumes or more beautiful jewels to set off the whiteness of bare shoulders. But from this splendid charitable effort hardly the slightest wave reached the suburbs where the hungry were besieging the bakeries. Children roamed about at night, disinterring half-grown beets and potatoes in the fields.

Six more corporations were put out of business by strikes. The heads of the textile industry, unable to get coal, closed their factories. The coal remained in the ground, and ships without fuel floated like coffins in the black waters of the canals. The trees in the parks gradually disappeared. No light reddened factory or forge, but occasionally a pillar of smoke would rise against the horizon of fog as some store of wheat was fired in reprisal against its owner.

Extremists found in these events an admirable occasion for their propaganda. One of the heads of the left-wing parties, Citizen Pinchon, secretary of the Metal Workers' Union, ran throughout France, organizing *methodical* disorder. He tried to bring the workers out of their apathy by telling them of needs they had not considered before.

He had begun life as a factory boy, but had gone to night school and turned out badly. He wrote pamphlets in which a just resentment over the wrongs he himself had suffered mingled with a viciousness of spirit which even

his best friends found insupportable. These writings, rich in poisons, were distributed in profusion among the working classes. Professional riot leaders, according to their usual methods, denounced the corruption of the government, the intrigues of the great companies and the collusion of the ministers with the money owner. They prodded the old lion of popular resentment whose toothless bite had for so long been no more than a mouthing.

After one of his propaganda tours Pinchon let loose the following cynical statement:

"The people have lost the taste for good figures of speech and can only be aroused by out-of-date ideas. Their mentality is that of an infant who has inherited congenital idiocy, as mediocre in his good moments as in his bad ones. The most exalted enterprises, the most noble ideals elicit from them nothing but a grimace or a smile. Their imaginations, inspired by moronic movies, do not go beyond their individual potentialities and are degraded by the lowest of appetites. We can do nothing against this universal indifference and stupidity."

The directors of the great trusts were not impressed, and would have desired at least one violent conflict that would definitely break the revolutionary forces. They feared those sly hostilities and partial strikes which exhausted an industry like a fever. In order to please them the government adopted severely repressive measures. In expectation of a general strike large stores of cereals were gathered and black troops called in from Africa, as being the most useful in police work and immune to propaganda.

These children of the sun, torn from their primitive barbarism, had received excellent elementary educations. Beside the sound theories with regard to respect for force and wealth with which they had been inculcated, they had been brought up in a notion of warlike honor. Patient, zealous, with a flair for parade, and with new helmets perched on their brachycephalous craniums, they were instruments admirably adapted for the defence of capital.

Without anger, but with the enthusiastic conviction of faith, they dispersed the unauthorized gatherings and opposed to the whirlings of the crowds their robust chests and cunning hands.

Their shoes seemed to know by instinct just where it is necessary to kick a man in order to produce in him a beneficial contrition for his misdeeds. If, in the exercise of such functions, they were called upon quite frequently to provoke the poorer classes and particularly the unemployed, it was not by accident, but by enlightened choice, the result of deduction and reflection—truly noble processes of thought. Thus do the benefits of education show themselves, substituting for the instincts of the brute the deliberate acts of an enlightened reason.

● The jobless had become a veritable social plague. They accepted their ignominious misery, one would have said, with something like pleasure, troubling the rich in the enjoyment of their profits without any gain on either side, and disturbing the thoughts of ideal justice. However, they could be annoyed in a number of ways with considerable ease. They were unable to defend themselves. This was, as a mathematician would say, sufficient reason. In fact this defencelessness is one of the strongest props of moral principle, a support which could not be removed without bringing down the whole of society.

The black brigades were very popular among the people who had work, artisans, salesmen, and so on, who on Sundays went to the drill-grounds at the edge of the city where they watched the blacks as with nude torsos they went through the exercises of sabre use and bomb-throwing. Curious about things military—animated by patriotic fervor and sometimes by inexpressible desires—the women pressed around the fences that surrounded the drill-fields.

There also the little disciplined troops of the National Militia came for their exercises. Having replaced their civil clothes by a uniform coat, a shirt of white silk and a velvet beret, their number grew with rapidity. Lively amazons accompanied them. When they passed through the streets, proud and erect under their embroidered flags, a murmur of admiration was always heard.

Their very presence carried comfort and a kind of patriotic warmth to the hearts of the spectators. In their ranks could be recognized retired non-commissioned officers of the army, students, workmen of good repute, repentant extremists, sons of the first families; the golden youth of the best part of the nation, hurrying away from its sports; well-clothed, well nourished, well washed—the flower of the bourgeoisie regenerated by a passion of sacrifice like crusaders—ready to defend the factories menaced by the infidels.

While the militia were received everywhere as liberators, the jobless encountered universal reproach. They had acquired the deplorable habit of holding their gatherings in open air, of assembling in hostile groups in front of the theatres and fashionable restaurants where they annoyed the eaters engaged in the peaceful labor of digestion. In vain the more serious newspapers informed them how undignified such an attitude was, depriving them of the sympathy of their best friends; in vain a respectable senator exhorted them to more resignation, and painting a deplorable picture of the state of industry and finance, showed them how the bourgeoisie were being bled white. They continued to persist in their unreasonable actions.

One morning they gathered in a crowd twenty thousand strong and marched through the boulevards in good order; men mutilated in the factories at their head. The police turned them aside without undue violence, and they poured through the exterior avenues to the city limits.

A man of uncertain age, his face bearded and lined, his clothes shabby, his air sad and depressed, mounted on a little hill and held a paper close to his glasses. It was Grammont, the only man who, from the beginning, had undertaken a sincere defense of the laborers. He lived in the hope of some day seeing the reign of justice and peace established and he preached the love of one's neighbor, the despisal of riches, and—vegetarianism.

Events had drawn him from his retreat, and vague general ideas, to take a part in the solution of immediate social problems. His writings revealed the curious candor of the student, drawn from his studies by force and a little terrified by the life for which these studies had failed to prepare him. He was a curiously inoffensive being, as helpless in society as a hermit-crab without its shell. His extraordinary near-sightedness, made him live in a sort of mystical isolation.

He had been a professor in an academy for young girls and to this fact he owed it that he had not been accused of anything extraordinary in the line of vices, but only of the seduction of minors. With his position lost, abandoned by his friends, avoided by his former colleagues, he expiated the detestable insolence of having freely ex-

pressed his opinions. The University had visited on him its severest disciplinary measures. What they could not forgive was that he had claimed for the unemployed not charity but the right to live.

● On the grass strewn with oyster-shells and melon-rinds, the proletarians considered, with a combination of mockery and disgust, this man of whiskers and papers, this bourgeois who had come over to their side for some unknown reason. He bore on his own scanty scarecrow person the indescribable marks of the intellectual. His feeble voice hardly reached their ears. They were bored. It was with pleasure that they saw Deputy Lebon take his place.

The deputy was clothed with a studied vulgarity that marked him as a true son of the people who would never deny his origin. His speech, at once violent and pathetic, against the government, swept all doubts about his integrity away and at once restored him to the confidence of the extremist parties. He described the misery of the working classes and ended thus:

"The government has refused to provide government department stores: it has suppressed cash payments to the unemployed in order to build more battleships which it finds more useful than houses, and to strengthen the army, the last rampart against the social revolution. Manifesting a misplaced pride it has discouraged international goodwill toward France. The fraternal aid of humanity is needed in our country and it is lacking now that she is almost exhausted by the effort of devouring herself.

"It is more than enough! There are moments when despair can bring an entire nation to the verge of suicide. I solemnly notify those in power that the patience of the people has reached its limit. Will they go, will they fly before we drive them out, these self-serving politicians, grown old in the practice of their ambitions, these hothouse plants of the government offices, overwhelmed by the calamities which their own incompetence has brought upon them. And you, who live in the shadow of egoistical indifference, you rich men who have grown richer through these troubles, you profiteers of the public ruin, do not wait until it is too late to make the necessary sacrifices! Fear the awakening of the people! Fear their anger, august and terrible!"

Frantic applause saluted this peroration. Lebon had to be rescued from the enthusiasm of his admirers, who would have borne him through the streets on their shoulders.

This speech was not without influence on his political future. At this period the deputy was passing through a kind of spiritual crisis. Convicted of shady transactions, not very important in themselves, but nevertheless inexcusable, abandoned by his friends in the Chamber, he discovered once more that softness of heart toward the common people which had carried him into power.

He had betrayed their interests, not because he was naturally treacherous, but because it was the parliamentary custom. Having now lost a part of his own fortune, he was able to understand the poor better. Besides, the elections were approaching. With an unfailing political sense, he discerned the approach of a change, an orientation toward a system of concessions to the laboring classes, sacrificing everything else to the reestablishment of its fortunes. He despised the National Militia and thought it wiser to conciliate the advanced elements of the country.

In the Chamber Lebon demanded the immediate institution of projects which would absorb idle labor, and a policy of financial economies, together with a capital levy. After a neutral speech from the Premier, the ministry was overthrown on a point of order.

The new government was laboriously constructed out of the remains of various ministerial shipwrecks with the addition of a minority of socialists.

CHAPTER XII

Chaos!

● At Anzin, Condé and Mons unemployment was not general. Ten thousand descents into the mine were made daily. In spite of the falling roofs, the infiltrations of water, the breakage of iron ladders and trucks, men continued to bring out the coal by the most primitive means and at the price of back-breaking efforts. At the roll call men were missing from every gang. The earth dumbly swallowed these twenty-francs-a-day heroes. Engineers kept the last machines going around them; pumps struggled with the invading tides, motors soiled with oil and earth worked on.

The strikers encircled these vital points.

At the close of a meeting held at Raismes, a thousand of them pillaged a trainload of food and burned what was left. They headed for the Amaury and Latour pits when they encountered a patrol of cavalry. The greater number of the strikers fled, but a handful made a resistance against the authorities. Around them the others gathered again and tried to liberate the prisoners. Horses wounded by knife-thrusts threw their riders and galloped wildly away.

That evening there was a tumultuous assembly at Condé. The police forces surrounded the Maison de Peuple, the gendarmes penetrated into the hall with the vociferating crowd. There was a panic and people were crushed at the doors. The gendarmes backed out gradually, and their prudence being mistaken for fear the movement went on. Three thousand strikers marched on Brusy. Their line of march was cut off at several points by barricades and they were finally dispersed on the height of Escautpont.

The victims of these affrays were carried through the streets in procession on the following day. The young communists massed at Bouvrages and the unemployed at the gates of Anzin. The authorities let them meet there in the open while the Blue Guards organized feverishly. The military headquarters advised the garrison to hold itself ready for any eventuality. It was necessary to gain time; the soldiers received orders to meet all provocations with inert resistance and at all costs to avoid a premature conflict.

Leclair, returning from Denain, ran into a procession that grew at every street corner it passed. Repulsed by the 3rd Brigade, the mass flowed back into the suburbs. Adolescents brandished placards, and an acrid dust rose from the beating of their feet. Drawn into the tumultuous crowd, deafened by the racket, he escaped into a little alley leading off to one side. Miners went by with their picks over their shoulders and a horse without a rider, its stirrups swinging, trotted along the sidewalk.

Hung around with red rags, a truck containing a dozen manifestants passed, saluted with cries of enthusiasm.

Leclair observed for an instant a group of young men

who were demolishing a trolley and felt a wave of indignation at the sight of so much stupidity and savagery. He was oppressed by the need of doing something. The atmosphere seemed full of obscure menaces, charged with an explosive fluid. He turned round suddenly, disturbed by the thought that Renée might have gone out, but at Six-Mariannes a company of Blue Guards refused to let him through.

Negro soldiers were grouped around a machine gun there, already in position on its stout tripod. He thought he might find a way along the bank of the Escaut, but he ran into a system of palisades and an abbatis of tree stumps. The broken flood-gates had let loose a yellow torrent of water and the streets were swimming with mud. On a plank bridge, he crossed a gurgling abyss, traversed the edge of the rocks and by a round-about route arrived at Lourches at last.

Once more he heard the beat of feet on the ground. At the end of the street a company of infantry armed with rifles was passing. Most of them disappeared behind the customs building, but the rest halted.

Dismounting from his horse an officer consulted a card bearing his orders, and lifting his head perceived Leclair. He asked the shortest road to Prouvy. Very young, with rosy cheeks beneath his gold-laced military cap, the military man was affecting an assured mien, but his gestures betrayed his nervousness. They had ordered him to watch the bridge at Haulchain and prevent the strikers of Trith and Douchy from uniting, but of the bridge there remained nothing but three arches of stone. Twisting his moustache, he confided:

"There are six thousand strikers at Samain with all sorts of criminals and some Belgian scum. They have destroyed the Concession d'Enfer and the offices of the Restruction Commission."

"But what in the world do they want?" cried the engineer.

"It's a mess," replied the officer. "There's disorder and anarchy everywhere, and even fighting. Douchy is full of trouble. The Belgians went down into the pits, but the strikers cut the tubing and all the galleries were drowned out. At Bruay they smoked the miners to death in their holes like rats."

Suddenly he stopped, his eyes fixed on a point of the horizon. From the height they could see over part of the city, the multitudes of houses, the streets, the roofs reaching away to the horizon where the mist mingled with the golden smoke of a far-away fire. At the bottom of the valley the Escaut rolled its flood along the granite quays. A pale sun struggled with the clouds. Little waves slapped. No sound at the water's edge except the plaint of the moored ships, squeaking at their chains.

But looking away toward Denain, Leclair saw the streets jammed with an ant-like multitude from which mounted a feeble rumor of sound, audible even at this distance. A troop of horsemen had just debouched from the Avenue des Saint-Pères and was trying to hold back the crowd. From this distance he could only distinguish through the torn veil of dust, the confused movement of men, gathering and separating, retractile masses which occasionally glinted with the metal of a sabre. The wind brought the echo of an explosion.

Under the light of the sun the little troop of cuirassiers seemed to float in the midst of the crowd like a fragment of silvery foam amid the waves of a torrent. It was dissociated, engulfed, every visible trace of its passage disappeared, while the great flood of human beings undulated through the too-narrow streets.

● At the moment while these events were taking place there were other skirmishes at Douai, Mons and Tournai between the armed forces and the jobless in revolt. The latter had the advantage of number and in the general confusion and with the difficulties of transport, gained some victories. But the instincts of the crowd caused them only to foam around the various obstacles that had been placed in their path. Here and there a tumult rose, but always to die out in long slow waves or to sink in its place after incoherent efforts.

Martial law was proclaimed in all the basin of the north, and the administrative powers were turned over to the military authorities. The leaders of the popular party, meanwhile, had been unable to agree among themselves. There was violent dissent among reformists and extremists. While they delayed, pulled this way and that between ambition and the fear of reprisals, the troops organized their positions. Three squadrons of cavalry, some infantry and gendarmes were sent up to Douai and Valenciennes. Heavy reinforcements of police arrived at Arras in trucks. The Commercy cuirassiers camped at Vicoigne and the prefect of Lille was seen casting frightened glances from the window of his auto as he fled through the suburbs.

Meanwhile, the rioters were in possession of the principal public buildings of Valenciennes. After having fortified the City Hall, plundered all the shops where food and arms were sold, they tore down the telegraph wires, demolished the railroads, and strung barbed-wire barricades across the streets. The Cateau bridge, already enfeebled by the Blue Evil was finished off with dynamite.

A number of the inhabitants fled. The peasants remained attached to the earth, in appearance quite indifferent to what was going on. They hid their supplies of wheat and oats in secure places; welcomed the soldiers as liberators and complained to the Reds about the soldiers. They were amazingly uninterested in who won.

A week went by in relative quiet.

One morning a fusillade became audible in the direction of Escaudain. Leclair, from his window, saw a hundred or more men go by, carrying bundles or dragging handcarts from the neighboring farms. The shop-keepers barricaded their store fronts. Windows could be heard closing, doors slamming.

In the afternoon, the miners of Boriange filed by in almost military formation, their guns over their shoulders.

The Morain place was outside the zone where the insurgents were massing and visits from them were not expected, but Leclair, deprived of news, reduced to inaction worried over a million different possibilities. Barrois had given no sign of life for three days. The people of the neighborhood did not dare go abroad while the Young Guards were absolute masters of the streets, impressing every able-bodied man they met, in their ranks, by force.

That evening, reassured by the general silence, Leclair ventured out.

The cankered orb of the moon occasionally showed itself in a sky darkened by masses of cloud. A damp breeze, blew sadly through the alleys. Rats driven from the mines by the progress of the *Siderosis* made animated

ink-blots in the streets and disputed the accumulated garbage with the starveling dogs.

Near the canal there were a few lights, and beyond, an obscure gulf that marked the line of the river. A white foam boiled round the comb of the dam and a murmuring mounted into the night.

As at Sidi-Said Leclair had heard the plaint of the waters in revolt, and the memory of the circumstances which had made the instrument of a perhaps irreparable disaster imposed itself once more on his mind. But what else could he have done, and of what use were these sterile regrets? The die was cast, the future decided it. Like the clockwork movement which sets off an explosion to a mine the Blue Evil was pursuing its regular and irresistible course. Keep the steel makers from selling their products? Too late! Those who had, with their own eyes, seen the effects of the plague, they alone had learned to fear it. And even though convinced of the existence of the danger, these selfish financiers, these engineers incapable of imagining so universal a catastrophe, would they abandon their operations?

He tried to imagine the result. In the complex ensemble of the power-house, which instrument would be the first to go. From whence would the initial shock come? The turbines whose blades felt the pressure of the waters or the iron tubes winding away beneath the earth? Under the thick carapaces of the machines beat the pulse of a whole system of life. There was the impetuosity of the waterfall, the slow movement of the rivers, the rapid, tiny shocks of the rain, the errant clouds, the free and numberless forces of the earth—all held prisoners by chains of iron . . . through which an invisible cancer was eating.

● Fibres stretched to the limits of their endurance would still endure. But if a single screw gives way—? Torn from the heart of the metal a cry rends the silence. The water gushes out, strikes the rock and breaks, the wounded artery throwing out a giant jet. A foaming geyser shoots toward heaven, the great voices of the savage forces at last unchained and now rushing to the assault, the bellowing of torrents under the vapors that rise as the water is pulverized by its own strength.

The obstacles in its path are swept away, the dikes break, a hundred brooklets course down the declivities where the earth reveals her naked bones. Through the wreck one could see the pieces of broken walls, of posts curved double, floating branches and a whole collection of inert things that once were living, all carried down in the torrent.

The vision was so precise that Leclair trembled as though he had seen it in actuality. He thought of his old friends doomed to inglorious deaths as surely as though he had killed them with his own hands. The thought had become a veritable obsession with him. And then he began to consider how small a part his own feeble actions had played in setting afoot the tornado which was ravaging the whole world, and his scruples appeared absurd. Were not all human enterprises condemned to the same end—and what use was there in tormenting himself?

But this melancholy imagining pursued him. Like a frightened child he felt all about him the sensation of the physical weight of the dark on his shoulders. He avoided invisible obstacles, lost himself in a network of streets where he recognized nothing familiar. At last a light caught his attention. He made for it and arrived at a square where a group of soldiers were encamped around an acetylene torch behind a barricade of planks. Some of them were asleep, others on guard by their piled weapons, and their gigantic shadows moved along the walls of the nearby houses.

The aspect of these little sleeping streets, with the broken houses cut off sharply against the moonlit sky like Chinese paintings; the wandering dogs, the disorder and abandonment into which everything had sunk, the soldiers silent beside their arms with their helmets reflecting the dancing flames, made upon a scene which seemed to belong to some antique and barbarous past epoch.

The clock on the City Hall struck ten sonorous strokes, and a voice could be heard singing a verse of a bawdy song; then silence gripped the city once more.

Hastening his steps, Leclair soon arrived at Croix-Verte, where Lefevre lived in a little house all by himself. The former factory superintendent appeared at an upper window with a lamp in his hand in answer to his knock, then said, astonished:

"What, you here, Leclair? What's the trouble?"

"Nothing. I simply wished to see you. Any news?"

"My word . . . No!"

He showed the engineer into a little office, and pointed to the pile of newspapers on an armchair.

"The latest one is six days old. It seems that the Federation has declared a general strike and the government is out. They're even talking of dissolving the Chamber. While they're trying to find out what they're going to do, all sorts of alarming rumors are being circulated. All the stores are closed and to make things worse, the provision train they expected yesterday hasn't got here yet. I wouldn't be surprised to find out that the strikers had gotten hold of it. The problem of existence is becoming difficult. But I thought you'd gone away."

"Mme. Morain is not well, and I'm afraid of the effect a long, difficult journey would have on her health. And I'm needed here for a while yet."

"What for?"

"The metal at Aulnoy. I've already mentioned it to you. It represents a fortune at the present price . . ."

"Which fortune belongs to Mme. Morain."

"Certainly. But Morain consulted me like one of the partners while he was alive, and—"

"I see," interrupted Lefevre, rather acidly. "You know which side your bread is buttered on. Not like me—after eight years of work in the foundry, being turned out without resources and without a job."

"Come," said Leclair, "let's be frank. I know you have made rather a good thing out of the Bethune mines. I need about fifty thousand francs . . ."

"Why don't you borrow them from Mme. Morain?"

"You doubtless know there is a contest about her husband's will. There are a good many creditors to satisfy, too; the thing will take time to work out in the courts."

"Ah, really! That man Morain! Who would have imagined he would jumble things up like that? That phosphate enterprise of his was no good. He must have been completely worked out toward the end to get caught in a thing like that after watching his step so well all the rest of his life. It was the same thing at the factory, though. He didn't get out in time. At the beginning the government was advancing capital to all the industries recognized as being of public importance. And most

of them thought they would find a way of beating the Blue Evil.

"If he had listened to me he never would have been caught in such a pinch. Look at Samuel. The Defence Committee paid him two million to destroy steel which he later sold back to the same committee. Samuel's got a sense of humor. And Camus with his trucks, and Richard and all the rest. It's fantastic when one comes to think about it. All those cardboard cannons, all those leaky boats, all those rotten rails wished off on the army or the navy or the Reconstruction Commission. They must have passed out no end of cigars The brigands!"

CHAPTER XIII

The Rise of the Reds

● Lefevre was absorbed for a moment in a morose daydream, and then began again.

"That was the time to pull off something big. I, even I, could have—but damn it, I never had a chance . . . and now it's impossible to get away with anything."

With an irritated kick he disturbed the log which was burning in the fireplace and began to stride around the little room, his hands in his pockets, his head drawn down between his shoulders like a turtle's. His face, framed in greying hair, bore a gloomy and stubborn expression. He relit his pipe at the lamp and discharged a couple of preliminary smoke puffs.

"Just the same you can't make me believe that Mme. Morain can't get several thousand francs in an emergency, Ronceraies, alone—"

"True, but it's a question of time. Let me explain. Mme. Morain's biggest creditor is Camus, who wants to seize the stocks of Duro-Fer to satisfy his claim. Morain declared some of them, but not all. Camus, who suspects something of the kind, is going to demand a new expert examination, and this will show up the presence of a concealed stock of steel.

"Well, you know how the new law is about that sort of thing. If we can get rid of Camus, we can get the intact alloys away to a safe place somehere. The trains are all requisitioned by the army, but I can get a couple of cars. I have spoken to a friend of mine at the central office of the commission, and he can arrange it if he has enough cash for expenses . . . Naturally, we would recognize your services in a suitable manner."

Lefevre reflected.

"I would have to have the strongest kind of guarantees. The metal stocks at Denain, steel and copper both—they're all shot, you know. But you have the Amaury properties. Why not sell them?"

"Time's not right for it."

Lefevre shrugged.

"Listen to me, Leclair. You were stupid in not unloading those things. Now you're losing money on them with every day that goes by, and you'll never get out. It's tough, I know, but you'll just have to take in sail. Unload, my boy, unload, don't hesitate. Do you want a piece of sound advice from an old friend? Realize everything you've got and insist on payment in good solid gold. Then put it into foreign money, precious stones and imperishable products, like rubber, wood, ivory—there are the things that are going to go up. Put your pile in a safe place. The time is coming when the present high values will just blow away; paper money will be so much dust. Then you can dictate your own conditions.

"The situation is worse than people think. They're all talking about little things; the change of the ministry, or the latest financial scandal. The deputies chatter and then go out and have a drink. They're afraid the socialists will get into power. But what does it matter if they do? The economic factors are the ones at the base of the whole business. These business men, they're too busy with their routine to apply anything but palliatives to the situation. Capital is going abroad, credit is falling and the cost of living is going up. Look at the inflation; it's increasing like the temperature of a sick man. Famines today and murders tomorrow, that's what we've got to face.

"As for me, I don't really give a damn. I'm going back to the Cevennes and live with my old folks, like an honest peasant. It's an easy existence, without too many cares. I'd be sorry to leave you in trouble like this, but really I can't do a thing for you personally. In a few days the Reds will have the forges at Trith and then you can kiss your stocks of Duro-Fer good-bye. They'll sell out to German spies. That would be too bad, and then perhaps you'll wish you had listened to me. If you wish, though—Listen. I'll tell you what I'll do. I'll buy out those stocks myself and give you a good price for them. As for the coal properties, I know a man who is willing to take a chance on any kind of desperate enterprise. Shall I speak to him for you?"

"By all means. I beg you to keep all this confidential."

Leclair swung suddenly round in his chair.

"What? Aren't you alone?"

The silhouette of a woman had appeared at the curtain of the door for a moment. That catlike motion, that thin face . . . "Why, it's Fanny! What's she doing here? Lefevre, you're an old rascal."

"No, it's not what you think," replied the other, hastily. "She just got here this evening. And in what a state. Her clothes were all in rags and she was half-crazy with exhaustion. Could I throw her into the street? You know, she lived in La Molière. The village was invaded by Lorraine and Belgian refugees and the people, who had already put up with a good deal, refused to take them in. You know how those peasants are—all right if you let them alone, but if you don't do what they want, capable of killing you on the spot.

"They turned the refugees out with pitchforks. Things started to pop when the Red Guards established order in their usual fashion, that is, by murder and pillage all around. After which they went back to their holes, dragging with them whatever women they could catch. This poor Fanny had the bad luck to fall into their hands and the Reds amused themselves with her. You know what that means. There were more than forty of them. Her shoulders are simply raw where they beat her."

● Lefevre swallowed hard. At the passage of some secret thought his features became animated and a close observer might have caught in his face a hint of the bloody and sadistic images that passed through his mind. But all at once the light behind the troubled eyes was extinguished and he turned toward Leclair the jovial mask of an honest man whose imagination does not go beyond the limits fixed for it by a good education and regular attendance at church.

"Bah! Disgusting!" he concluded. "She recognized your voice when you hailed me even before I did, but she didn't want to come in. What is there between you two, anyway?"

"Nothing."

"Ah, if I thought . . . that girl is not too prudish, you know. Shall I call her?"

"Never mind. It's late and I must be getting back," said Leclair, rising.

Lefevre held him back by the arm.

"Are you still thinking of going to Algeria?"

"Possibly."

"My dear fellow, you're making a mistake. It's going to be necessary to get as far away as possible from all places where human beings congregate."

And as Leclair did not seem to be convinced, he went on:

"These agricultural colonies! The promoters of the idea are backing them only to get rid of the unemployed here. They stay home and split up the dividends. Swindling the human race is an industry that always has an impressive front. In your shoes, I'd wait a while. If the Reds are beaten the situation will change. In any case keep in touch with me, will you? I will call on you at Ronceraies and we'll go into the situation more deeply. I'm sure there must be some way out for you. You haven't the business experience I have, and I can help you a lot. But don't tell anyone . . . Anyone," he repeated, as he accompanied the engineer to the door.

"What an imbecile," thought Leclair, "Does he really think I'm going to fall for that? And to imagine that among all the people I knew it was he that I counted on the most."

Thinking over the character of Lefevre, contemplating that ferocious egoism so shamelessly displaying itself, that lack of morality almost delightful in its simple candor, he felt a trifle saddened.

At bottom Leclair was a direct and candid person who found it best to cover his ideas with such cynical phrases as are necessary in a utilitarian age when every idealistic weakness imperils the existence of its owner. Thus, in nature, many harmless creatures wear the most vicious and energetic exteriors. Leclair believed in a reign of justice, based on certain principles, to which he conformed his own actions, without abandoning his interests. The inevitable departures from his standards involved in this dualism were in a sense superficial and could be spoken of as invisible to the eye of his conscience. It is this moral propriety which distinguishes such people as he from the genuinely honest.

This evening the spirit gripped him more tightly than ever and the bad state of his finances only plunged him deeper into the mood. He had been discovering for some time and under adverse circumstances, how much friendship is worth when it conflicts with self-interest, for which it is usually the cloak; how, in emergencies, everything else is effaced by one single power—money, the principal factor of human existence.

Poverty filled him with horror and any expedient seemed justifiable in order to escape it. The struggle for existence was becoming singularly difficult, and everything he heard and saw seemed to show that it would become no less so. Instruction, education, were not only of no help to him, but actually created in their possessor a certain inferiority in a society where only the ignorant and criminal could obtain anything sensational in the line of triumphs.

An unkind fate menaced every intellectual. Thinking over the destitution which was the lot of certain of his acquaintances, he felt not pity, but a sort of pain. So much the worse for the timid and the hesitating! As for himself he had long since decided not to let them cut his throat in such a manner. Those who knew how to adapt themselves most readily to altered condition of existence were making all the profits. Lefevre was right—industry was dead and one must seek some other source of existence. The important thing was not being overcome. As yet he could see his own path only with difficulty, but one idea seemed sensible—return to the earth.

People were talking already of the foundation of a new Atlantis. In the beginning it was only the jobless and hungry of all races who had emigrated. The others followed the movement after the colonies were founded. Enterprising men, having decided to build new lives, were quitting the cities by the thousands. The government was encouraging these exoduses, giving enormous grants of land in the colonies for the most insignificant sums. There were rushes toward the more fertile lands like the gold rushes of old. Leclair envied the young men he had seen marching out with all their worldly goods over their shoulders, proud in the hope of a glorious future.

Special circumstances had already determined the direction of his own choice—Morocco. His desire to embark made all difficulties seem light. He saw himself already the proprietor of a great estate with fortune smiling on his efforts. The only real obstacle was Renée. He had already laid his project before her, but she said she would never consent to emigrate. Her health, moreover, was not good enough to support the trials of so rude a type of existence.

● Thus Leclair soliloquized on the way to Ronceraies.

When he arrived his decision was fixed. He opened the question at once, in his habitually frank manner when he found himself with Mme. Morain:

"My dear Renée, I doubt whether you can find in Paris the repose and tranquility you need for the building up of your health."

"Where do you suggest going?"

"To a country where the *Siderosis* is unknown—Morocco. The climate is excellent. I have friends there, and you would not be alone."

It was while discussing the question of the Zettat phosphates that the idea had occurred to him. The properties acquired by Morain some time before his death had depreciated in value. Instead of selling them, he now suggested buying in others at the same cheap price. The mine belonged to the Camus-Vilcor Company, which was undergoing the process of liquidation. If she were willing to speak to Camus, the concession could doubtless be obtained on a profit-sharing basis.

He knew the type of work well and the stock of alloys at Aulnoy would enable him to build up the machinery. The exploitation of the tract on a commercial basis would thus become possible. In six months, he felt certain that he would be able to renew the old vitality of the enterprise. At least the chance was worth taking; almost anything was preferable to the miserable existence that awaited them here. And finally, it was the best means of escaping from the creditors.

This last argument he perceived to be a mistake; he added quickly, "We can pay up everything later. Do you think I'm romancing about the prospects? I have thought over the project with some care."

She repressed a gesture of irritation.

"Oh, let's talk about it some other time."

"It will be too late then. I don't want to frighten you, but I have the impression that the state of affairs here is serious. We must prepare for the worst. Even the means of getting away may be lacking later." He looked about him, paced back and forth, and seeing a key lying on the table, picked it up and bent it double in his strong fingers in an effortless effort of nervousness.

"I'm sure. Not a thing here will be spared. It won't be long before even this house will no longer be safe. We must get away from this accursed city."

Distracted, the young woman hardly seemed to be listening. He took her by the arm.

"What do you say, Renée? Answer me."

"I don't know what to say. And if things get better here, in spite of what you expect?"

"We can wait there till they do, till the tempest has passed over. There will be nothing to keep us from coming back later."

And following the train of his idea:

"We must make a decision soon. Denain may fall into the hands of the Reds at any moment."

But Renée was not afraid of them. They were, she thought, only unhappy people who had been driven to desperate measures by their misery. Hunger is a good defence for many charges. She had been halted in the street by a patrol of Young Guards the day before, among them certain workers from the Morain factory. She had recognized them without difficulty. Their leader, a youth with a timid air, wore a red shirt and a revolver attached to his hip with a string. He had excused himself politely and had suggested that the patrol see her home; there were so many "bad eggs" roaming the streets these days. She had discovered that Selevine had become one of the most influential chiefs of the communist party.

"Charming!" exclaimed Leclair, "and no doubt you expect him to protect you if these brutes become masters of the city?"

"Why not?"

"That is, until the moment when the soldiers stand him up against a wall and shoot him like a mad dog. My dear Renée, I don't understand your indulgence at all. Communists! Those vultures who see nothing in the difficulties of our country but another occasion to tear at her. They imagine they are going to reconstruct things. By sitting and shouting at each other over their drinks, no doubt, in the usual Communist fashion!"

"Raymond," she said after a moment, "You will go alone. I'm going to Paris."

He protested, but without genuine enthusiasm. Paris was unsafe just now. He would never consent to such a folly. So many bonds united them. They could not separate now. It was, in fact, a matter already decided . . . as soon as he could liquidate this matter of the mines . . .

"If you wish to sell the properties out, I will be glad to make over to you my own holdings."

"I don't really need them. And we will have plenty of time to talk about that. My Renée, I am remembering our first meeting, our walks in the park. I realized then how much alone you were and your sadness went to my heart. We understood each other well then. Now it seems you are escaping me. What have I done to displease you?"

"Nothing. I know you a little better, that's all."

"You are as hard as a rock."

But he did not even take the trouble to protest. He had obtained what he wanted, and already he was forming a new plan—buy the adhesion of Vilcor and sell the properties to the Iron Cartel. Certainly he would see to it that Renée did not lose. He was ready to act decently. Once the interests of the young woman were safeguarded, he would feel more at liberty to get away. Without accounting for the association of ideas he thought of Fanny. With her woman's intuition, Renée divined that he was accepting the separation and the thought saddened her—we are not the masters of our own sentiments and neither logic nor reason guides the operations of the human heart.

CHAPTER XIV

The Dying Steel

● On the fifteenth of January the brigades from Arras, assisted by police forces, attacked the rebellious cities. At Valenciennes the Reds, not having been disturbed for several days, had taken advantage of the respite to fortify their positions, throwing up barricades, surrounding with bastions the Bourse du Travail and the City Hall, where the headquarters of the movement were located. They had plenty of arms, most of which came from the arsenal at Marly.

A good estimate put their number at something like a hundred thousand for the whole basin of the North. But the energetic elements were much less numerous and were, in a sense, drowned in a population which, while hostile enough to the defenders of order, was passive and desired quiet more than anything else.

Everything that could be eaten or drunk had been found and consumed and for the moment they were provided with full stomachs which induced a spirit of lethargic optimism. The first contacts with the troops had given the mob courage, and many of them expected to find sympathy and even assistance from the soldiers, as their orators had told them. Few of them knew the actual status of the situation or what the result of their adventure would be. They could all have been brought round by peaceable means. But the government dominated by a financial oligarchy which had been rendered ferocious by its money losses, and pushed on by the frightened bourgeoisie, wished nothing but a quick and implacable repression of the revolt.

By an ingenious maneuver, General Fremont, commander of the First Corps, had isolated the rebels and cut off their main masses from one another with chains of fortified posts. Those who tried to reunite ran into the military strongholds or encountered a barrage of tanks and armored cars, ready to spit death from every gun. The rebel message bearers were captured and their wireless traffic systematically jammed, causing the greatest confusion in their ranks.

The International Labor Federation launched an appeal to the proletariat of all countries, and by a narrow majority voted for a general strike, but at the same time expressed its disapproval of the revolutionary form the

movement had taken. The members of this great federation were numbered by the millions, and its decision was rigorously obeyed. Three days later all work ceased in Berlin, Munich and western Prussia. The horses were brought up out of the mines, ships were anchored in deserted harbors.

As the workers left their shops at Sheffield, Glasgow and Birmingham, sanguinary brawls between them and the police broke out. Sailors from Scotland, brought in to replace the striking stevedores, mutinied. The order for the interruption of work reached Italy, and the dispossessed factory-owners had to make room for councils of their laborers.

The councils of Turin, Naples and Tuscany, who voted for a general partition of the land, encountered a resolute resistance from the peasantry and combats desolated the countryside. In Spain the anarchistic association began a program of terrorization, to which the government replied by merciless repressive measures. The panic which followed sent thousands fleeing over the frontiers. All over the world the price of food suddenly advanced, there was a lack of coal and the death rate went up. People died of hunger and cold.

Nevertheless, in France itself, there were disagreements between the syndicalists and the workmen's councils. Minority groups, campaigning actively for their ideas, pushed the combat with vigor and gained new adherents daily. All of them exalted the social revolution by every conceivable means and set fire to inflammable imaginations.

The Premier succeeded in overcoming the movement. A former socialist, who flattered himself that he was able to retain the confidence of all the advanced parties, he showed no pity to the strikers once he got into power. Behind his massive facade there lurked a bitter and calculating intelligence. His fallacious promises, his assurances of good feeling toward the working classes, retarded the hostilities and gave the troops time to effect their concentrations.

At the beginning of the trouble, he had exercised a subtle clumsiness which prevented all negotiations from having any result, and this excellent bit of tactics endeared him to the employers who were unable to get their workers back on the job at anything like normal wage figures. At the same time he made a gesture in the other direction by sacrificing several financiers who had stepped over the bounds of decency, and thus satisfied the people's well-known thirst for justice.

In the Chamber, before a packed house, he described the state of the Capitol, attacked in the most vital parts of its organization. His voice was pathetic as he told how agitators, as stupid as they were criminal, were trying to bring about the fall of his government. In the interest of the country, and since all methods of persuasion had now failed, he would attempt to bring them back to more healthy views and a respect for established institutions and the power of the law by a series of exemplary punishments.

The greater part of the socialists approved his decision, meanwhile making certain reservations dictated by long parliamentary experience.

Other questions were then considered.

Deputy Lebon demanded large votes of funds for the navy, which had been hard hit by the Blue Evil.

With the unanimity which great causes can inspire, with the patriotic élan of the days of the great Revolution, the deputies voted the necessary sacrifices.

● In a rainy dawn, the inhabitants of Denain saw a regiment of Blue Guards go by, preceded by their colonel. The helmeted infantry were five thousand strong; then came a black brigade which was to be employed for specially dangerous tasks as their native ferocity woke under the excitement of combat in a manner beautiful to behold.

The main body of the army arrived before the first barricade, an inextricable tangle of rafters, rails and bricks torn from the neighboring factories. One end of it touched a complex mass of houses, the other a factory surrounded by walls against which stood a coal-dump. Further on, the rebels, with their arms ready could be made out—miners in leather vests, steel-workers in blue jumpers, young Red Guards, gathered in little groups here and there. There were a good many of them about the factory grounds, milling around in a common mass that vibrated a warlike ardor. Silhouettes moved to and fro among the coal-piles and slag heaps.

To outflank the obstacle, one would have to pass through a maze of narrow streets; perhaps fight their way through them. The colonel conferred with his officers.

Already an old man, with a timid air and a greying moustache beneath his glasses, he looked more like a professor who had grown bleached over some recondite study than a warrior. In his personal makeup he exhibited a not uncommon paradox; the association of barbaric traditions with cold, speculative intelligence. His eyes, grown dim over scientific books, contemplated the fortification of these misguided men with something like pity, and he wished he had a means of overcoming them without too bloody a conflict. He had political ambitions of his own and did not care for the idea of displeasing the left-wing leaders of the Chamber. The socialists had been representing him as an enemy of the people and he found the rôle one profoundly distressing to his sensibilities. In vain he had tried to enter wireless negotiations with the insurgents; his appeals had received no reply.

The action began somewhere in the suburbs. A machine gun rattled, distantly, and everyone leaped to attention. Lieutenant Dutertre, mounted on his favorite horse, came up at a gallop.

"Mon colonel, I have had three men killed and Blanchette's knee has been grazed by a bullet. Look how it bleeds. The brutes! They told us their arms were unusable. Shall we attack?"

"Wait a minute . . . Lieutenant, you know your blacks. Not too much energy, now."

"Oh, mon colonel, they are all as gentle as lambs."

"Well, you understand what we are after. Prisoners, not barbarity. And above all, no souvenirs. After all, they are Frenchmen."

"Those Frenchmen over there are our worst enemies."

"Yes, yes. But you know how a certain section of the press exaggerates things. They only need an excuse—for instance, if an ear, a single ear . . . you understand . . . a single ear is cut off, for . . ."

He sighed. "Ah, this is a thankless job."

The other had already left. In a series of bounds, followed by brief periods of taking cover, the black soldiers were progressing, seeking some flanking route, but they were halted by a sudden fusillade. A negro collapsed. In the rear the horses plunged, while their riders made convulsive efforts to control them. At this moment a mes-

senger arrived from Chalons for the colonel. Reading over the note he brought, the officer turned pale and then gave several rapid orders. The lieutenant had an amused light in his blue eyes.

"Well, we're really going to begin. Ah, you bums over there! Mon colonel, you're going to see something really good."

Down the empty street, pushed by the hands of men, advanced a strange engine of war. All metal had been rigorously eliminated from its construction. Armored in fibro-cement, with reservoirs of compressed air, topped with a moving tube, one would have said it was some prehistoric monster. The idea of the invention, which was altogether new, was due to General Fremont, a humanitarian who dreamed of bringing about world peace by fear, through augmenting the means of destruction, to such a point that men would no longer fight.

The opportunity for trying out this new type of tank, designed for use against enemies from beyond the borders, was too tempting to be missed, and it had been hastily rushed through to completion. The colonel chewed the ends of his moustache and gazed at the monster with disapproval. He liked fine horses, cannons, sabres. He was a man of tradition.

"Tell me, lieutenant, this gas, no . . . ? You're sure . . . ? It isn't deadly?"

The other gave an imperceptible shrug. "What an idea?" Aloud he said, "Mon colonel, the shells are filled with chlorosedemil."

"What?"

"Chloro—se—demil; narcotic vapors. You will see. They'll drop off to sleep like babies. No pain."

● There was a subdued whistling. The fibrite globe fell a little short, burst softly like an egg, permitting the escape of a smoke whose curls rolled lazily along the ground. Grenades that raised fountains of gravel and dust around the tank began to burst, and the machine profited by the occasion to approach a little nearer. An odor of chlorine reached the colonel's nostrils. The soldiers could be heard coughing. In spite of the absence of wind the yellowish gas was flowing back in their direction and through a gap in the artificial fog the top of the barricade became visible. The lieutenant returned at a gallop.

"What's happening?"

"The dirty rats! They have installed a machine. I don't know what it is, a pump, a wind machine or something, that drives the gas backwards. My men are blinded and spitting blood. But how did they do it? Mine ventilators, I suppose. Listen, you can hear the motors . . . It's incredible. We must—What's that?"

The colonel lifted his glasses and looked.

"They've stopped firing. Something's happening."

With a cry, a group of the rebels had run from behind the coal pile to seek cover elsewhere. Those in the open flattened themselves to the ground beside guns that had rotted to uselessness, overwhelmed at the prospect of being without defence. Their comrades tried to rally, in spite of bleeding hands and faces scorched by bursting guns, but every shot directed toward the troops was only another weapon against themselves.

Their chief cried out, "Fight on!" but what could they fight with? Teeth and nails? The grenades were bursting among them and they had no reply. The infantry was advancing in front, others were already shooting them down from the rear of the barricades. They were without defence, facing death.

On a neighboring roof a machine-gun blew up in a burst of flame, and something like a sack of meal rolled down the tiles and crashed to the ground. Out of the shadows surged a face, crying with the torment of the tortured body that belonged to it. The insurgents' last arms betrayed them.

Their courage gave way. All but a little desperate group, abandoned their position and fled by any route they could find. The rout was complete.

And now the ardor of battle grew strong in the soldiers. The dragoons rode down the rebels in the factory yards and streets, sabering the flying without pity. The thick smoke which had enveloped the field of action began to lift and the wounded were to be seen among the broken stones and the iron debris around the barricade.

There remained in the factory itself a thousand or more men. These surrendered at the first summons.

Meanwhile the 2nd squadron was carrying the barricades at Est by assault. After a desperate struggle at Herin they got across the Escaut and surrounded the City Hall, where the Reds shot, sang and shouted like so many maniacs. The black troops fired two volleys and then charged up the stairs. They came down again a little later, laughing and with scarlet spots on their brown hands.

The two leaders of the insurrection perished in this engagement. Someone had set fire to the old building and it was soon destroyed with its dead.

The soldiers returned slowly in little groups, panting and covered with perspiration. After the exaltation of the combat an indefinable discomfort overwhelmed them. Far away, cries could be heard from the Saint Roch quarter, where the Third Hussars had surrounded a group. The vanquished had poured petrol over everything before taking to flight and a nauseating smoke rolled over the whole neighborhood.

The horrors of fratricidal war struck home to these tired men.

The rain had stopped. Little pools of water reflected the grey calm sky. The inhabitants began to stick heads out of windows, exhibiting frightened eyes in faces haggard with insomnia. Some of them even came out to insult the prisoners being led away to the fortress of Malplaquet. Surrounded by gendarmes, they marched along in silence in clothes wet through by the rain.

● Already soldiers from the Engineers' Corps were re-establishing the means of communication, clearing up the railroads and streets. A poster announced to the population that plentiful provisions would soon be at hand. While waiting for their arrival, everyone was urged to restrain their appetite as far as possible. Court martials were established for the trial of all grave crimes such as armed rebellion and pillaging; the syndicates and workmen's councils were dissolved and public meetings were forbidden.

Government engineers everywhere were notified that they were subject to the orders of the military authorities, and the state of siege declared for the basin of the North included the requisitioning of all machines and buildings necessary for the public use. An economic commission, furnished with dictatorial powers opened sittings at Lille.

The inhabitants were exhorted to be patient, to be calm and to work. The union of all good republican hearts and hands in the public services was demanded as the only force which could save the country from the most terrible danger that had ever menaced it.

Under the orders of the Procurer-General suspicious places were searched and a good many arrests were made, but without much success so far as suppressing extremist agitation went. The repressive measures only seemed to fill the ranks of the associations with new members. After the breakup of the great organizations new parties were born on all sides out of the confusion of ideas—the Vigilantes, the Populists, the Federalists,the Volunteers of Order, a hundred factions that asserted their interests and promoted antagonistic ambitions.

The Vigilantes, composed of the socialists who disapproved of revolutionary methods and who were determined to reestablish order and security by any possible means, grew in number from day to day. United by oaths, they practiced a rude form of self-discipline and inculcated the more Spartan virtues; wore a uniform of a cut at once romantic and military and adopted the fasces and axe of the Roman lictors as their insignia. The integrity of their principles did not permit them to make compromises. They reproached the head of the government with venality, unskillfulness and softness, and this point of view gave them the support of the National Militia, to which they expected some day to oppose the forces of the Red syndicates.

At Amiens, the Vigilantes refused to turn over to the authorities deserters from the army who had taken refuge in their ranks. Similar clashes took place at Nancy, while at Brest, Marseilles and Toulon, they openly sympathized with the mutinying sailors. The whole country was filled with the turmoil of groups striving desperately for contradictory purposes. Leaders, unheard-of before, assembled partizans, threw some province or city into disorder, and then as suddenly disappeared. Irregular bands gathered to disperse the first attack and then regather again. An incessant and bitter mutual hostility divided all these little groupings from each other. The human mind was expressing its incoherence amid a chaos of ideas. Wild agitations of obscure origin swept through the country amid a univeral uprising of the most primitive instincts, and panic sent hordes flying from terrors they could not name.

CHAPTER XV

Flight!

● Renée, who had been dozing, opened astonished eyes.

The carriole was getting away from the laboring district now and the wheels were bumping over pieces of wood and dislocated rails. Puddles of water, covered with a scum of coal-dust, were stagnating in the streets where the barricades, only half removed, still exhibited their rafters and sections of barbed wire. No human movement animated the houses behind their closed blinds.

Shivering in the damp cold, she burrowed deeper into her furs and steadied her tired head on her hand. Her eyelids, heavy with a night of wakefulness, closed insensibly. She saw Leclair again, not living, but as she had recognized him among the corpses of the day before. His face was twisted with his last agony, his hair matted with blood, his eyelids drawn back from glassy eyes. The broken roof of the hospital had let through a shaft of light which struck these sightless faces, drab-colored like cinder or wood.

A medical officer told her how they had found the body at Aulnoy where the stocks of steel were piled after the Reds had been sacking the place. On the forehead was the mark of a blow from some heavy instrument and the hand was still tightened around the grip of a revolver. The voice of the medical officer had been slow and quiet. It seemed somehow far-away, unreal, and without any relation to her own existence. She tried to imagine the last drama, but the features of her late friend dissolved in the fog of the past.

A sensation of disgust mingled with her pity as she realized it was easier for her to picture that murdered body, delivered over to the horrors of decay, than to recall how Leclair had looked full of youth and life. She accused herself of lack of feeling and cursed her own detestable imagination. Poor Raymond, who had begged her to go away with him, fearing these revolutionary struggles with good reason. He had predicted an ignominious death for Selevine, and that death had struck down Leclair himself, while the Russian, who had passed through a thousand violences was sitting there beside her, safe and sound. It seemed to Renée like a treason against divine justice.

Motionless, guiding the horse with a sure hand, he looked at the horizon; his bony face, to which the light gave a strange saffron color, seemed both tired and tense. She thought she could read in it a certain hardness of soul, the rigor of a conviction which can make of its victims either martyrs or devils, according to the chance of their environment. How much less dangerous was the skepticism or the nonchalant faith of a Leclair or a Barroisl This man belonged to a different and more barbarous race, more excessive in all its sentiments; full of confused aspirations, but also younger and containing the vigorous germs of the future.

"I will never be able to understand," thought Renée, searching her mind for the reasons that had led her to defend Selevine to the point of imperilling her own security.

He had come by night to hide in the park around her house, wounded and pursued. The shriek of a whistle had awakened him with a jerk from a fitful rest. One could hear the sound of the water and far-away clamors. The river was piling the remnants of bridges against its banks, and black soldiers were exploring the neighborhood with torches held at arm's length. Their clubs fell dully on the heads of pillagers and incendiaries. Selevine was there in the shadow, his head bare, his clothes torn, trembling with the reaction from the struggle.

The rage of defeat convulsed his features. Most of his comrades had been killed in the attack on the barricades, others had been caught later. How he had escaped, he himself did not seem to know. He had leaped from a window, run a gauntlet of fire, torn through a line of barbed wire and swum a canal while police-dogs gave tongue on his trail, and raced through the ruins of the foundries. A negro had tripped him, and as he struck the ground he had shot the man dead with his revolver. He was breathing heavily, like an animal, repeating "The brutes, the atrocious brutes," and filled with a mad desire to kill, kill, kill.

But she had drawn him to her, had enveloped him in

loving arms, herself shivering, and had breathed out words of supplication and entreaty. "Rest here . . . Don't abandon me . . . I'm alone, I'm afraid." And she had made him hide himself, recovering enough of her strength to lie to the searchers and send them off in another direction.

Nevertheless she despised him a little for having given in to her, for having so easily accepted this precipitate flight. Her voice was aggressive as she said:

"It was your Red Guards who assassinated Raymond and not vulgar bandits as you tried to make me believe. I am sure of it now. Only your extremists would have wanted to steal arms and tools."

Selevine, who had not said three words since the previous day, made a gesture, but did not unclench his teeth.

"You might at least answer when I speak to you."

"My dear Renée, I don't understand the reason for these reproaches."

"I'm not reproaching you with anything," she said with angry energy.

They had to stop to let a convoy of prisoners go by. Hands chained together, they seemed a troop of beasts on the way to the slaughter-house. The inevitable punishments—the firing-squad, the prison or the deportations, weighed down their shoulders. She looked at Selevine's face without being able to see a trace of any emotion at all imprinted there. The lamentable procession disappeared around a turn in the road.

● The carriole entered the suburban district which surrounded Escaudin with a black fringe dotted with gardens. The houses began to space out and give way to stony fields, bordered with the ruins of factories between their double piles of coal and clinkers.

Passersby were rare at first, but beyond Aniche they began to encounter carriages and then refugees with their bundles over their shoulders; miners on their way to the Maubeuge district in search of work; women pulling badly-clothed children behind them, peasants from Vicoigne and Bruillé whom the famine had driven from their holes like wolves in winter, Belgian and Lorraine steel-workers, Italians from the sugar-refineries, with oily skins under their masses of black hair.

Around them extended a blackened and scarred countryside, marked everywhere with shining pools of water. The rain struck the back of the carriole obliquely. The horse jerked and stumbled at intervals. A truck containing a dozen soldiers splashed them with mud as it passed, and was presently followed by others, carrying up loads of provisions or tools, each accompanied by its armed escort. Then came a series of odd vehicles collected from everywhere and loaded with domestic objects; rustics driving their cows and horses and bicyclists covered with mud, bent double over their handle-bars.

A patrol of the Militia of Order went by, their guns over their shoulders, their profiles accentuated like cameos by the sweeping berets they wore. A group of men belonging to no recognized formation, mercenaries, deserters from the army, pillagers of factories, who showed through the holes in their ragged garments bodies corroded by contact with the rotten iron.

Further on a stalled horse-truck was holding up traffic. Wrapped in his sheepskin coat, an old man was trying to make his fallen horse rise. The crowd simply collected around the obstacle. A dispute broke out between a youth who had dismounted from a bicycle and the proprietor of a hand-cart. The latter pushed forward a rough face; his breath smelled of alcohol and his hands hung twitching by his side. The two men looked at each other like fighting-cocks for a moment, then the younger was sent to the ground with a push. He was up in an instant, brandishing a long knife. Someone disarmed him. "A Belgian!" cried someone else, "Death to the Belgians!"

Betrayed by their accent a group of Walloon miners brandished picks in the faces of their attackers. The pressure of the crowd tightened so that it was impossible to breathe. A girl screamed. Stabbing about at random with his iron-shod staff, somebody bloodied the belly of a horse which, held down by the shafts, kicked convulsively. With stupid obstinacy the old peasant continued to beat the animal with the handle of his whip. Jokers offered ridiculous advice; a few well-placed bombs would reanimate the lazy animal, they said. One of them patted the carter on the shoulder.

"What have you got in your sacks? Are you deaf, grandpa? What—plaster. Are you going to build a house?" Laughter. The man looked around with a frightened air, his simple face running with perspiration. A drop of kindliness seemed to filter into the hearts of the crowd. Willing hands began to tug at the wheels, shoulders gave friendly pushes to the cart. It was partly unloaded. But when one of the sacks leaked clean white flour, oil was poured on the flames of the mob's resentment. Selevine made an attempt to intervene, but mouths vomited obscene jokes and curses at him.

Renée was the object of glances that made her burrow down in the furthest corner of the carriole.

One of the vagabonds leaped on the step of the vehicle, gripping the handles. With a slash of his whip, Selevine made him release his hold, then flogged the horse into rapid movement. A shower of stones and curses accompanied their flight.

Selevine looked at Renée's frightened face.

"Don't be upset by a little thing like that," he said. "There are plenty of such incidents."

"You're very reassuring."

"Until the communists come into power and reestablish order. But people have to live."

"To live," thought Renée. "What's the use of it? Where can one find the strength necessary to carry on an unattractive existence in which the weak are everywhere trampled on?" She felt a sudden need of rest. "Only to isolate oneself in some secure retreat where one would never hear the Blue Evil mentioned again; to forget oneself—are these unrealizable desires?"

A pleasant remembrance floated into the field of her thoughts. She saw herself once again a young girl in the Scotch city where she had been educated. The stones of the boarding house were covered with ivy and wistaria whose leaves shivered in the sea-breeze. A delicate light bathed the neighboring hillsides. Young men played, bare-headed, in the green countryside and among the laughing gardens. One of them had kissed her on the lips one day. How sweet life had seemed then.

A feeling of discouragement filled her at the thought of remaining for the rest of her life without a real friend in the world, and a murmur of loneliness escaped from her lips.

"I'm all alone."

● Some tender emotion woke in Selevine. He was suddenly aware of an unformulated hope. His mouth became dry and an artery beat in his temple. As though in a dream he heard the young woman say:

"Why is it always necessary to struggle against the evil deeds of men? Vanquished by destiny, succumbing to all the evils, they will find strength enough to hate. There are times when I find myself frightened by this inexplicable world."

"Just the same," said Selevine, " they are no more than our unhappy brothers." His voice was a trifle hoarse.

"Here's Soumain," he remarked a few minutes later. "In half an hour we'll be at Campeau."

A monotony of roofs appeared in the distance behind a screen of trees. The sky grew clearer above the red tiles.

Soumain, which has only two schools for ten thousand inhabitants, makes up for it by possessing two hundred saloons. Estimable bottles showed their fat bellies in every window reflecting the dull light.

Children who were playing in a brook stopped to inspect the newcomers. A soldier bearing the insignia of the Council on his tunic emerged from a guardhouse and verified their papers.

The horse seemed at the end of his strength. After having trotted for several miles his breathing had become asthmatic and he seemed to want to lie down. Selevine leaped out to examine his feet; two of the shoes were broken. The carriole leaned sidewise, creaking, and seemed so feeble that even Renée preferred to go afoot. Perplexed about what to do the two stopped at a farm whose walls reached to the roadside through a screen of trees. The owner of the place came down to meet them, quieting his dog. After having heard Selevine's explanation of their plight, he said it would be impossible to make repairs anywhere near. There did not remain a usuable horseshoe for ten miles around.

If the distribution of the agricultural instruments promised by the Council did not arrive by March, he would have to do his plowing with a wooden plow in fields already overgrown with weeds and beaten by rain. "When the ground gets lazy, it's the devil's own job to make it work again," he remarked.

Having made this declaration, the good man insisted that the young lady stop and rest a little. He cut a loaf of bread and put some milk and butter on the table. Selevine offered to let him keep the horse and carriole until they came back to call for it, but Renée, resolved to get rid of them at all costs, accepted the absurd price the peasant offered without demur.

Her companion urged her to hurry on. Three miles still separated them from Montigny and time was passing. Their host told them of a short cut that would take them there quickly.

The countryside was surprisingly calm. Leaving the village they traversed little roads through fields that had become like sponges. The land, gorged with rain, was damp under the rotten vegetation and smelled faintly of fever. A marsh reflected the vague color of the sky and the confused forms of the clouds. Bodies of various sorts rotted in holes beneath a covering of flies. Renée gave a little cry at seeing among the weeds where it had lain concealed until they passed close, a body with bare feet pointing at the road. A little, furtive animal fled as they approached.

They reached another town; its shops were all pillaged, its factories empty of humans, its houses cracking apart to show sordid interiors that seemed ashamed of the light of day.

The water from the broken pipes had inundated the ground, but someone had laid planks here and there. Plants were already pushing up through the puddles around the ruined houses. The few people one saw looked like beggars. Something in their attitude filled Renée with a kind of pained astonishment. They had the appearance of sleep-walkers or convicts, moving rapidly about without uttering a single word, or laboring hopelessly at some menial task. Not one of them turned a head to look at the passers-by.

When they reached Montigny the night had already begun to fall. This mining city had recently been the scene of violent riots between the laborers and the troops. The Blue Evil had ravaged everything.

In the evening mist, which drowned the whole region, not a single light was burning; only the reflection of some fire appeared on the horizon behind the leprous houses. Like cyclopean towers, the forges of Bruillé lifted above the black mass of the buildings, the huge tubes that only yesterday had been crowned with flame now forever silenced.

The powdery earth, invaded by the water, traversed by subterranean torrents, showed long crevasses where the blue-flames of fox-fires were sometimes visible. Stony fields extended in every direction. And from the drowned out mine pits projected fragments of beams, shrivelling ashes of iron and sulphurous vapors.

Near the railroad station a patrol of dragoons were warming themselves around a fire. A resigned multitude pressed along the platforms and overflowed onto rails reddened by two weeks of disuse. Further on several pieces of railroad equipment were visible; a signal tower, a few electrical pylons with trailing wires, and the white globes of lamps.

(To be continued)

WHAT IS YOUR SCIENCE KNOWLEDGE

Test it by this Questionnaire

1. What is the best known rocket fuel? (Page 391)
2. What speed is necessary for a trip from Earth to Venus? (Page 392)
3. What is believed to be the relative ages of the Earth and Venus? What conclusions can be drawn from this about the surface of Venus? (Page 393)
4. What are the rays in the electromagnetic spectrum? (Page 430)
5. Where is Syrtis Major? (Page 435)
6. What lies in space between Mars and Jupiter? (Page 436)
7. What should be the physical sensations of a person aboard a space ship in outer space? (Page 436)
8. How could the human body become petrified? (Page 444)

MASTER OF THE ASTEROID

(*Concluded from page* 439)

The walking-stick people have re-appeared before the flier. I feel sure, from their lesser height, their brighter coloring, and the immature development of certain members, that they all represent a new generation. None of my former visitors have survived the winter; but somehow, the new ones seem to regard the *Selenite* and me with the same curiosity and reverence that were shown by their elders. They, too, have begun to bring gifts of unsubstantial-looking fruit; and they strew filmy blossoms below the port . . . I wonder how they propagate themselves, and how knowledge is transmitted from one generation to another . . .

The flat, lichenous vines are mounting on the rocks, are clambering over the hull of the *Selenite*. The young walking-sticks gather daily to worship—they make those enigmatic signs which I have never understood, and they move in swift gyrations about the vessel, as in the measures of a hieratic dance . . . I, the lost and doomed, have been the god of two generations. Perhaps they will still worship me when I am dead. I think the air is almost gone—I am more light-headed than usual today, and there is a queer constriction in my throat and chest . . .

Perhaps I am a little delirious, and have begun to imagine things; but I have just perceived an odd phenomenon, hitherto unnoted. I don't know what it is. A thin, columnar mist, moving and writhing like a serpent, with opal colors that change momently, has appeared among the rocks and is approaching the vessel. It seems like a live thing—like a vaporous entity; and somehow, it is poisonous and inimical. It glides forward, rearing above the throng of phasmidae, who have all prostrated themselves as if in fear. I see it more clearly now: it is half-transparent, with a web of grey threads among its changing colors; and it is putting forth a long, wavering tentacle.

It is some rare life-form, unknown to earthly science; and I cannot even surmise its nature and attributes. Perhaps it is the only one of its kind on the asteroid. No doubt it has just discovered the presence of the *Selenite*, and has been drawn by curiosity, like the walking-stick people.

The tentacle has touched the hull—it has reached the port behind which I stand, pencilling these words. The grey threads in the tentacle glow as if with sudden fire. My God—*it is coming through the neo-crystal lens* . . .

THE END

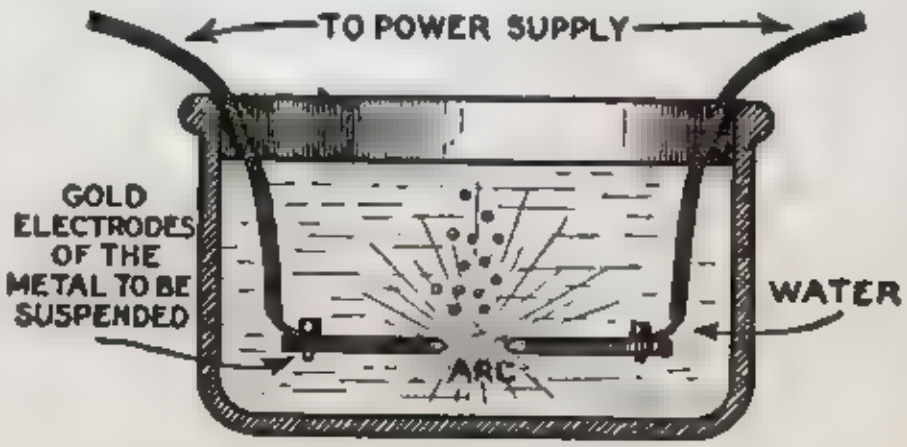
PRIZE WINNING LETTERS

July 1932 Cover Contest

● The following letters have been awarded the ten prizes offered for the best letters explaining the July cover. Those spherical, vari-colored balls apparently constituted a challenge to our readers; for we could perceive in many of the letters the evidence of careful study and the perusal of text books and scientific references. Many of the letters were ingenious but scientifically faulty; many were far-fetched; many contestants unwisely tried to make a science fiction story of the cover.

But the editors as judges remained hard-boiled; we wanted explanations that would pass muster scientifically and we got them. The three cash prizes were awarded to men who have fully met our requirements—that is, they convinced us that their explanations were plausible.

We hope that the September cover will constitute another challenge to our readers; and that the genius used in explaining it will even exceed that in the contest that is now closed.—The Editors.



APPARATUS FOR THE PRODUCTION OF A COLLOIDAL SUSPENSION OF A NOBLE METAL

Showing how minute spherical particles can be produced by an electric arc passed across gold electrodes in water.

A Colloidal Suspension

1st Prize ($15.00) Winning Letter

Submitted by Stanley Burk, R. D. No. 1, New Kensington, Pa.

I believe the cover of the July Wonder Stories represents a highly magnified colloidal suspension of one or more of the noble metals in water. Such a colloid is prepared by breaking larger particles of the metal into particles sufficiently small to be suspended (instead of dissolved) in water. Colloidal suspensions of the noble metals may be obtained by passing an electric arc between electrodes of the metal under water. The metal is volatilized in the high voltage arc, and the vapor very rapidly condensed by contact with the water. This rapid condensation forms very small particles of the metal.

There is a tendency in all colloidal suspensions for the particles to coagulate and precipitate out of the medium. Due to the large total surface area created by dividing the metal into such small particles, the particles absorb ions, if any are present in the water. Colloids also show selective absorption — that is, particles of one substance absorb negative ions more readily than positive ones, and vice versa. A suspended particle which absorbs an excess of positive ions over negative ones becomes positively charged; one which absorbs an excess of negative ions, negatively.

Since colloidal particles of the same substance will absorb the same sort of ions in excess, thereby assuming the same charge, and similar charges repel each other, the colloidal particles will also repel each other, preventing coagulation.

(*Continued on page* 478)

THE MAN OF STONE

(*Continued from page 445*)

for he was always hated and feared and suspected of dark dealings with the devil. My father once called him The Devil's Kin, and he was right.

"No one will ever know what I went through as his wife. It was not simply common cruelty—though God knows he was cruel enough, and beat me often with a leather whip. It was more—more than anyone in this age can ever understand. He was a monstrous creature, and practised all sorts of hellish ceremonies handed down by his mother's people. He tried to make me help in the rites—and I don't dare even hint what they were. I would not, so he beat me. It would be blasphemy to tell what he tried to make me do. I can say he was a murderer even then, for I know what he sacrificed one night on Thunder Hill. He was surely the Devil's Kin. I tried four times to run away, but he always caught and beat me. Also, he had a sort of hold over my mind, and even over my father's mind.

"About Arthur Wheeler I have nothing to be ashamed of. We did come to love each other, but only in an honorable way. He gave me the first kind treatment I had ever had since leaving my father's, and meant to help me get out of the clutches of that fiend. He had several talks with my father, and was going to help me get out west. After my divorce we would have been married.

"Ever since that brute locked me in the attic I have planned to get out and finish him. I always kept the poison overnight in case I could escape and find him asleep and give it to him somehow. At first he waked easily when I worked on the lock of the door and tested the conditions at the windows, but later he began to get more tired and sleep sounder. I could always tell by his snoring when he was asleep.

"Tonight he was so fast asleep that I forced the lock without waking him. It was hard work getting downstairs with my partial paralysis, but I did. I found him here with the lamp burning—asleep at the table, where he had been writing in this book. In the corner was the long rawhide whip he had so often beaten me with. I used it to tie him to the chair so he could not move a muscle. I lashed his neck so that I could pour anything down his throat without his resisting.

"He waked up just as I was finishing and I guess he saw right off that he was done for. He shouted frightful things and tried to chant mystical formulas, but I choked him off with a dish towel from the sink. Then I saw this book he had been writing in, and stopped to read it. The shock was terrible, and I almost fainted four or five times. My mind was not ready for such things. After that I talked to that fiend for two or three hours steady. I told him everything I had wanted to tell him through all the years I had been his slave, and a lot of other things that had to do with what I had read in this awful book.

"He looked almost purple when I was through, and I think he was half delirious. Then I got a funnel from the cupboard and jammed it into his mouth after taking out the gag. He knew what I was going to do, but was helpless. I had brought down the pail of poisoned water, and without a qualm, I poured a good half of it into the funnel.

"It must have been a very strong dose, for almost at once I saw that brute begin to stiffen and turn a dull stony grey. In ten minutes I knew he was solid stone. I could not bear to touch him, but the tin funnel *clinked* horribly when I pulled it out of his mouth. I wish I could have given that Kin of the Devil a more painful, lingering death, but surely this was the most appropriate he could have had.

"There is not much more to say. I am half-paralyzed, and with Arthur murdered I have nothing to live for. I shall make things complete by drinking the rest of the poison after placing this book where it will be found. In a quarter of an hour I shall be a stone statue. My only wish is to be buried beside the statue that was Arthur—when it is found in that cave where the fiend left it. Poor trusting Rex ought to lie at our feet. I do not care what becomes of that stone devil tied in the chair . . . ."

THE END.

Where Do Comets Come From?

It has been lately suggested by a Russian scientist that comets are the products of eruptions of Jupiter, of very recent date, as astronomical time goes. In that case, Jupiter may be preparing to throw out, from the Great Red Spot, a visitor to our nightly skies which will be as startling as Halley's comet or any of the other terrors of past centuries.

Whether this theory is a probable one, when we consider Jupiter's "family of comets," and what the true nature of comets may be, is discussed in one of the interesting scientific articles in the October issue of

EVERYDAY SCIENCE AND MECHANICS

THE PLANET OF YOUTH

(*Continued from page 405*)

Long before this time, I had been convinced of the dismal truth. Alas for dreams of eternal youthfulness! and for visions of immortality! Even Ponce de Leon, roaming the wilds of Florida in quest of his mythical Fountain, was not pursuing more of a chimera than were we who looked to Venus to grant us a shield against old age and dissolution! To seek perennial youth on our neighbor planet was not merely vain! It was foolhardy! It was to forfeit even the chance of long life that earth-dwellers might otherwise have!

All too clearly now I understood that Venus, with a diabolical snare, rejuvenated temporarily only in order to kill! Her radioactive elements did indeed increase the vigor of the sojourner there—but at what a cost! Now all at once I remembered how our ancestors, nearly a century ago, had thought to cure various ailments by the use of radium waters, finding at first that the waters seemed to effect the desired end, but that after a time the patient died. In the same way—but to a much more deadly extent—the radium on Venus served at first as a stimulus, but after repeated action became converted into a death-dealing poison.

● Now how thankful I was that I had not remained longer on Venus! How fortunate I felt to have inspired the malice of Pendexter! How blessed to have been frustrated in all my attempts to become a Venusian resident!

Grieved as I was at the fate awaiting all the migrants to Venus, I did not find the turning of the tide to be anything but an advantage to our own world. Had it not been for the unexpected effects of life on Venus, human life on this planet would probably have disappeared. But the knowledge that Venus was not the abode of perpetual youth—knowledge that could not help seeping by degrees into the public consciousness—acted as a much needed tonic to our sick and tottering planet. So deeply, it is true, were the minds of men set upon the notion of Venusian immortality, that at first they would not or could not believe themselves deluded; but after a time there came evidence after evidence that not even the most stubborn could deny, and then began the life-giving Era of Recreation . . .

It was that phenomenon known as the Great Venusian Panic which marked the beginning of the upward swing. All at once—by one of those emotional contagions which travel faster than lightning and which psychologists have yet to explain adequately—the residents of Venus were swept with a maddening, overwhelming fear. Doubtless it was the death of many of their number which caused this sudden access of terror, though why it began precisely when it did is more than any one can say . . .

At all events, a frenzy like that of stampeding cattle overcame the Venus-dwellers; they grew frantic to escape, frantic to get back to earth; and, as the mounting mania to return dominated the planet, men went to every crazed extreme, fighting with each other, trampling upon each other, slaying each other in the competition for space on the earth-bound liners . . . with the result that thousands were destroyed without being able to leave Venus, while other thousands, in the insane rage to depart, boarded vessels so hastily and unskillfully manned that they were lost in space or went to a withering doom in the sun.

While disaster was laying its hands upon the planet, I not unnaturally wondered what had happened to my old enemy and persecutor, Pendexter. But let us not speak of him too harshly—he has gone to a land where there is neither youth nor age. Reports differ as to how he met his fate: according to one account, he was slain in the riots of Venus, while a second story has it that he entered a spaceship which was never heard of again. But a third—and a more probable version—is that he was one of the multitudes stranded on Venus, to perish there of radium poisoning after all the space-vessels had been stolen by the panic-stricken rabble.

Yet although neither he nor the great majority of the settlers on Venus ever returned to our planet, a few cowed and white-faced wretches did succeed, by rare good fortune, in getting back to earth. And these spread such pathetic and ghastly stories that men could not help listening; and could not help recovering their senses.

And the wave of reaction, once fairly started, gained power with the speed of a cyclone, till millions came to shudder at the name of Venus, and the very mention of the word aroused loathing and revulsion; while the thought of immortal youth was cast aside as many a dream before it has been discarded in the history of our race, and even those who had been most ardent in their desire for Venus would mutter, resignedly, "Alas! We knew it could never be! We knew it! We knew it . . ."

And now, since men no longer had the illusion of Venus to mislead them, they were willing to think once more of the affairs of earth. And workers came flocking back to their jobs, and the wheels of factories began once more to turn, and farmers put their spades again to the abandoned soil, and legislators and judges resumed their forsaken seats, and the whole mechanism of civilization began to function anew . . . To be sure, it would require many years for the world to recover from its wounds; but, by way of compensation, men had learned a salutory lesson, and probably not for generations to come would they be lured to seek a will-o'-the-wisp on another planet.

Ten years have now passed since the pricking of the bubble. Today the word Venus is used only as an execration, a term of reproach never uttered in polite society . . . and those of us who have been to that planet are trying our best to live down the dishonor. Personally, I take care never to mention that I have voyaged across space, and am hopeful that by a life of arduous work and good deeds I may atone in some way for that misfortune which I unknowingly precipitated upon the world.

Space-navigation, I believe, is bound still to progress despite the fearful setback it has received; but when some adventurer next puts forth across the gulf between the worlds it will be toward Mars, Jupiter or Saturn; while Venus—the sepulchre of so many hopes and men—will forever remain a "No Man's Land" that astronomers will follow with their telescopes but travelers will shudder at and avoid.

THE END.

OUTCASTS FROM MARS

(*Continued from page* 415)

mitting it to Rokol. Like clumsy albatrosses they took off into the gale with precious little regard to finesse, and fled with the tail wind of the storm.

Black chasms yawned below—jagged, steep-walled gashes gouged out between saw-tooth crags and long dikes. And in the bottoms of deep canyons lay ancient glaciers, sleeping under many seasons of snow. Rosson thought little of the primordial landscape, as he stood at the window looking down. Just one thing he was searching for with his brilliant landing light—the second insulator. A lofty peak loomed massively below. A small dot appeared near the summit like a lump of coal on a pile of salt.

"Hold it!" he cried.

The plane wheeled into the blast under the expert pilot's control waiting for the second ship. Five hundred feet away at right angles to the beam, and some hundred feet below it, Rokol took up his position.

"Here we go, Rokol. All set?"

"Yesss, ready."

"Watch that beam theodolite angle and keep 500 feet distant."

● Slowly, the two planes moved forward, fighting a cross-wind, and maintaining position with the greatest of difficulty. Anxiously, Rosson bobbed up and down between the concave buffer to the window to watch Rokol. With the passing moments his nerves tautened as the ship's helicopters strained mightily to lift the beam from its inexorable, downward parabola. In a nervous sweat he felt the floor trembling, as if in the very center of two mighty opposing forces. Yet gradually, they were shoving the beam to the right and upward away from the glacier. At last Lonar was safe!

But as they neared the peak of Helland Hansen the tension became terrific. Here the beam dropped more rapidly.

"Climb higher!" bawled the engineer, sweating freely from his thick furs as much as from high tension.

Winds shrieked through struts and wires. Helicopters tore into the horizontal air-stream with a shrill whine. The ships crawled ahead doggedly to the rhythmic whistling of forward props. Rosson was a human dynamo of energy, bellowing orders above the pandemonium, and dashing to the window to glance hurriedly upward only to dart immediately to the buffer. Little by little it was going up. A thousand feet. Maybe less. Anyway they were making progress. But it was like handling a massive, taut cable, one end of which curved down abruptly. It seemed immovably fused with the black ground it had cleared for itself.

"Rokol, here's where we've got to take a chance," Rosson shouted into the transmitter. "We've stopped her from going any farther down the slope, but haven't been able to lift her clear. Now, when I give the signal shoot all the juice you've got to the for'ard props. It may force us down as we approach the ground end of the beam, but it's the only way we can bust her loose. Ready?"

"Ready, Earthman!" came Rokol's quick reply.

"Then give it to her!"

Suddenly, the plane picked up momentum. The shrill whistling up ahead rose in a quick tempo to a screeching wail. Horizontal blades let out a wild scream in the terrific air wash. The planes were descending, forced down by the stubborn repulsing beam. Rosson, white of face, stared ahead where the power-beam was spewing itself upon the solid bare face of the mountain. A thousand feet away it was. Still they lost altitude. The Martian pilot turned a haggard face on the engineer.

"Earthman—!"

"Keep on—you can't stop now!" he barked fiercely. His knuckles were white where he gripped a hand rail.

Not a whimper from Rokol. They might have been going to their death in that electrical cyclone where millions of volts fused the rock in a blinding arc. Several hundred feet more now.

Suddenly, the whole beam trembled in a violent column of blazing light. A thunderous crackling and sputtering followed. Then a deafening clap. The beam snapped up into the sky like a rigid coiled spring and then steadied. It was done! And they were safe!

Rosson landed at the old insulator, gazing at the pilot with a wan smile. A close call. But he looked even worse than the Martian—and his face would scare a ghost!

Immediately, he called the Interplanetary Station. There was no time to lose.

Radcliffe fumed in a profane fit, wanting to know what had been happening. Tersely, Rosson gave his account. Rokol came into the cabin as he was talking. "But tell me, Clif, were we in time to save the *Martian Princess?*"

"No. The passengers took to their life ships. There was one life ship that was lost though—guess it fell into the sun—a complement of Martian small-men we didn't have on the passenger list. Serves those Lunar devils right, it wouldn't have—!"

"That's all right, Clif, these people have had their lesson," admonished Rosson, gazing pityingly at Rokol's tragic face. "Rokol, here, almost gave his life with mine to get the beam back in place. And Clif, you're going to help me get a transfer for these people to Argentina!"

Radcliffe stuttered a moment. "Well—if you say so. But it will take a lot of tall talking to cover up this incident."

"You can do it—if anybody can; you've got the power!"

Radcliffe nodded understandingly.

THE END.

Science Questions and Answers

This department is conducted for the benefit of readers who have pertinent queries on modern scientific facts. As space is limited we cannot undertake to answer more than three questions for each letter. The flood of correspondence received makes it impractical also, to print answers as soon as we receive questions. However, questions of general interest will receive careful attention.

Hydrogen and Oxygen United

Editor, Science Questions and Answers:

Would oxygen and hydrogen explode by electricity? I am interested in knowing as I am making a scientific experiment

Francis Oldaker,
Cumberland, Md.

(If oxygen and hydrogen are mixed and an electric spark is passed through the mixture they will combine with explosive violence to form water, or rather steam. Hardly any mixture that is generally used produces a greater heat or more violence than does the oxygen hydrogen mixture. A pound of mixture, (hydrogen and oxygen) which would mean 8/9 of a pound of oxygen and 1/9 of a pound of hydrogen would liberate 6,900 BTU of energy, sufficient to raise one pound of water 6900 degrees Fahrenheit or 6900 pounds one degree! You can readily see therefore what would happen to the pound of water produced by the union of hydrogen and oxygen in the experiment. Unless the utmost of precautions are taken and extremely strong apparatus is used under the guidance of an expert, the experiment is extremely dangerous and we would not advise its being made.—Editor)

The Evolution of the Solar System

Editor, Science Questions and Answers:

Could you tell in your columns what the various theories are as to the origin of the solar system? I understand there is considerable dispute among astronomers on this question.

Thomas S. Barclay,
Pasadena, Cal.

(The first man to put forward a really scientific explanation was Pierre Simon Laplace in the 18th century. His 'nebular hypothesis' assumed that where the solar system now is a vast mass of gas existed, which rotated on its axis. Its speed gradually increased to such a point where the gas masses on the rim escaped by centrifugal force and formed a ring of matter which gradually contracted to a planetary body, rotating about the primary. With the contraction and continued increase of speed of the central body another gas mass would be thrown off and another until only the primary remained which became the sun.

Mathematics proved the "nebular hypothesis" to be unsound. It was widely held for a century and a half however until, in fact the planitesimal theory of Chamberlin and Moulton displaced it. They stated that two stars passing close to each other would raise vast tides on each other's surface and cause the ejection of material from the surface. This material was drawn out in spiral arms, resembling the great nebulae in space. Most of the matter drawn out fell back into the sun but some escaped and having sufficient velocity rotated about the sun. The intensely heated gases would cool and finally solidify into planets. By drawing to them smaller bits of matter the planets would grow in size. Other pieces would form satellites of the planets, or moons. Modifications have been introduced into the planitesimal theory in late years, but in substance it is generally accepted as opposed to the nebular hypothesis.—Editor)

The Composition of the Atmosphere

Editor, Science Questions and Answers.

1. Will you kindly tell the composition of the atmosphere, by volume of each constituent?
2. Who first liquefied air, and how?

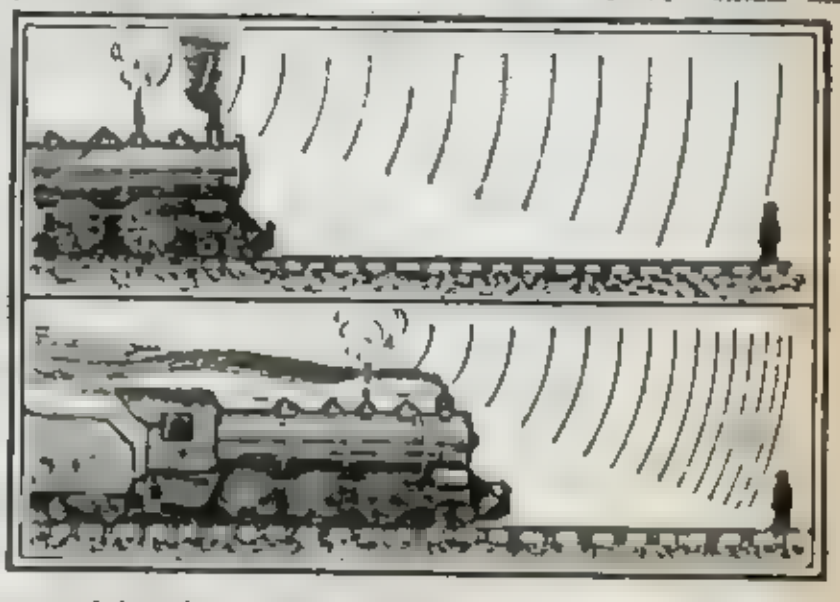
John H. Traynor,
Carmel, New York.

(1. The composition of the atmosphere, by volume, based on latest available information is as follows:

Nitrogen	78.03%
Oxygen	20.99%
Argon	0.94%
Carbon Dioxide	0.03%
Hydrogen	0.01%
Neon	0.0012%
Helium	0.0004%

Besides these there are the various oxides of nitrogen, ozone, water vapor, dust. Naturally, however, when volume of a gas is considered, the temperature and pressure of the gas must be known. For example the gases close to the surface are under atmospheric pressure (14.7 pounds per square inch) and at the temperature of the surface. Several miles above the surface the gases are under a much lower temperature, which would condense a given weight to a smaller volume, but the pressure is much less than at the surface which means that a given weight would occupy a larger volume. However for general purposes the above distribution by volume may serve.

2. About 1875 Cailletet in Paris and Pictet in Geneva both liquefied air. The method used was to subject the gases to great pressure and cool them to the lowest point attainable, evaporating liquid sulphur dioxide under diminished pressure. The compressed gases were then allowed to suddenly escape and the cooling resulting from the expansion was sufficient to cause condensation. The present day methods of obtaining liquid air on a large scale were devised by Dr. Linde in 1895 and by others, and are based on the progressive cooling of a stream of escaping gas by its own expansion. —Editor)



Illustrating the Doppler principle as applied to sound. Sound waves from the whistle of the stationary train (above) reach a listener at a constant rate and he hears a constant pitch. When the train is moving toward him (below) he gets more and more waves per second and hears a whistle of a constantly rising pitch.

The Doppler Effect—Roche's Limit

Editor, Science Questions and Answers:

These questions have long puzzled me. Perhaps you can shed some light on them.

1. What is Doppler's Effect?
2. What is Roche's Limit?

J. H. Igoe, Jr.,
Kenosha, Wis.

(1. Anyone who has stood on a railway platform and listened to the whistle of an approaching or receding train, has witnessed an example of the Doppler Effect. As the train approaches the pitch of the whistle becomes higher and higher; and as the train recedes it becomes lower. The explanation of this type of phenomenon was first put forward by Christian Doppler (1803-1853) an Austrian mathematician.

Sound travels in a wave motion through any substance (air, water, glass, wood, etc.) Its speed through air is 1090 feet a second. Let us assume that the frequency of the waves emitted by a locomotive whistle is 1000 per second. Therefore an observer or listener would have 1000 waves per second reaching him from the train. The wavelength being therefore 1.09 feet. Now if the train were to move toward him it is obvious that more than 1000 waves per second would reach him, depending upon the speed of the train toward him. If the train moved quickly enough so that 1200 waves a second reached him, the effect on his ears would be the same as a stationery train emitting sound at 1200 waves a second. This "higher frequency" strikes the ears with a shriller note, and so the train whistle, by this Doppler effect, would seem to become more shrill. The same effect would be noticed if the train or sound emitter were stationery and one moved toward it; for again more waves per second would reach the listener, equivalent to a higher pitch.

The opposite would be true if one were moving away from a source of sound. The Doppler effect is applied also to light phenomena. If one moved toward a source of light, more waves per second would strike his eyes and give the effect of a greater frequency light, or a light of shorter wavelength. The opposite would be true if one were moving away from a light source. The application of this principle has been enormously important in astronomy. Observing certain nebulae, astronomers discovered that the spectral lines from them seemed to shift periodically toward the red end of the spectrum. Now in the spectrum of light the frequency varies from violet light to red light, the latter being of the lowest frequency. The astronomers reasoned, therefore, that since the apparent frequency of the light reaching us from these nebulae was becoming smaller, that it could be explained if the nebulae were receding from us. By measuring the amount of the shift in the spectral lines, the astronomers calculated that some nebulae were rushing away from us at enormous speeds, as high as 12,400 miles a second. This has given rise to the belief that the universe is exploding.

But true or not, the point is that the simple Doppler principle has been extended in its

(Continued on page 479)

READERS

If you like "Science Questions and Answers" in this magazine, you will find in our sister magazine, EVERYDAY, SCIENCE AND MECHANICS, a similar department, greatly expanded called "The Oracle." Look for it, you science fans!

IN this department we shall publish every month some opinions. After all, this is your magazine and it is edited for you. If we fall down on the choice of our stories, or if the editorial board slips up occasionally, it is up to you to voice your opinion. It makes no difference whether your letter is complimentary, critical, or whether it contains a good old-fashioned brick bat. All are equally welcome. All of your letters, as much as space will allow, will be published here for the benefit of all. Due to the large influx of mail, no communications to this department are answered individually unless 10c in stamps to cover time and postage is remitted.

More On Mental Telepathy

Editor, WONDER STORIES:

I seldom say anything, but just cannot keep quiet this time. What is all the fuss about anyhow? Well, I'll tell you. It is the September issue of WONDER STORIES and believe me it sure is a corker. All of the stories are *par excellence*. That new serial, "The Death of Iron" promises a grand and glorious finish.

The idea that metal has a mind of its own, although in a lower form of the generally accepted opinion of what the mind is and how it functions, this idea is scientific or I'll eat my hat. And upon the subject I wish to reproach Mr. H. J. Weber of Chicago, Ill., who jumped on "Mental Telepathy" as not being a science. That made me squirm in indignation at the most unreasonable threat to my pet hobby

Science is the subject of matter, matter in turn is energy, otherwise it would not exist. Mental telepathy, or in more modern form, telementation is an application of mentation or mind power at a distance, whether sending or receiving thought impulse. Mind power is the foundation of energy upon which the existence of matter depends. Mind power in various stages of development exists in the electrons, in all matter, organic or inorganic. All matter, the cells of your body, can think—each atom of iron, lead, radium, clay, rock, can think because it has a form of mental power that permits it to exist in that particular state or form.

The various planets have great power because of their mass; that is why they can and do exert an influence upon life and living conditions on this earth

Have you ever been in a factory where there was plenty of huge machinery around? You felt the presence of a dominating power; you develop a form of inferiority complex and you feel better when you leave. Now go out and watch an ant scrambling around. You now feel superior because the mass energy of the ant would not affect you. But the individual atoms of the huge machinery were sufficient to make their presence felt.

A. W. Shipley,
McKeesport, Pa.

(We think the error that Mr Shipley makes is in attributing the *same* kind of life to the elements that is possessed by organic life. No doubt, in a way, many inorganic materials can grow, decay and die just as living things do. But there is a difference. However, we thank him for his interesting ideas.—*Editor*)

A Completely Dissociated Brain

Editor, WONDER STORIES:

Having just completed the enjoyment provided by the July issue of WONDER STORIES, I decided to drop a line to "The Reader Speaks" and to voice a few opinions

First of all, I wish to present, in all humble diffidence, an idea for a story, which I think would be favorably received by science fiction readers everywhere. My idea is this: Let the action originate on another planet, or even in another galaxy. The genuine antique plots which we all know so well need not be altered much, and yet, by placing them in a new environment, so to speak, variety of a different kind is obtained. Our own planet could be linked up with the plot by having explorers from the "home" planet venture forth and discover it; or again, let Earth be the villain and aggressor of the piece for once in a while, and the inhabitants of the "home" planet the oppressed beings, striving to throw off the yoke of the Earthmen conquerors from space.

Well, having shot off that, I'd like to state a little appreciation of the stories in the July issue. The very best story was "The Time Conqueror", by L. A. Eshback. It was a most impressive and masterly piece of work, and merits the highest praise. Much credit is due to Mr. Eshbach for the original plot of his story. The thought of a completely dissociated brain developing a "hyper-sense" is intriguing and fascinating, to say the least. I should be very grateful if you would prevail upon Mr. Eshbach to give us more of this type of story.

The next best story was "Castaways of Space", by Arthur G. Stangland, and provided gripping imaginative reading throughout. Mr. Stangland has the happy knack of combining keen excitement with good science.

"Master of Storms", "In the Year 6000", (Part One), and "Breed of Helios", (conclusion), were about the same as regards interest and quality. I thought they were only just good, with nothing wonderful about them.

By the way, although I'm not entering for the cover contest, here's my idea of what it represents: It is an enormously magnified view of a chemical mixture, and the colored balls represent the molecules of the different substances in the compound. This view is borne out by the apparently regular arrangement of each separate color-group. Please tell me if I am wrong.

Fitzgerald P. Grattan,
Summerhill South,
Cork, Irish Free State.

(Mr. Grattan apparently makes a free offering of his plot. We are rather skeptical of stories dealing with another galaxy, unless they are made convincing as such. Few authors possess the talent for such stories.

The prize winning letters for the July cover contest will be found in this issue; so Mr. Grattan can compare his answer, short as it is, with the winners.—*Editor*)

Localizing Love

Editor, WONDER STORIES:

I have just completed the serial, "In the Year 6000", by Otfrid von Hanstein. It was a wonderful story while it lasted, but the last installment of this story changed it entirely.

Why do you, in a magazine based on scientific facts, allow such "stuff," to be printed. Localizing love in the heart! Anyone with the simplest trend of scientific thought would not let this pass as the truth.

Would a person say, "I love you with all my gall-bladder," or, "I love you with all my lungs!" so why love a person with all your heart? The heart is no more than a combination of muscles and blood vessels, with the function of pumping blood throughout the body.

Maybe in later years, master surgeons may be able to transplant the living heart of human beings. (Incidentally, I am studying to become a surgeon myself. Perhaps this makes it impossible for me to see in the human body, anything divine or soulful, but just as it is, composed of the same materials as chicken gizzard and the like.) But as to changing a man's emotions by changing his heart! Oh it makes me sick. I take it for granted that the readers of WONDER STORIES want stories based on scientific fact, and not on old superstitious ideas.

This is the first time I find something I did not like, in the two years I have been reading your magazine. I am wishing you many more successful years.

M. Hoffstein,
New York, N. Y.

(It is true that the ancients might have been wrong in placing the seat of the emotions in the heart. But their reason for so doing was physiologically sound, for when our emotions are affected the rate of flow of blood—the heart action is changed, and so the ebb and flow of our emotions can be determined scientifically by our heart beats. Isadora Duncan, the late dancer stated that the seat of the emotions was the solar plexus, located below the two bottom ribs; a scientist recently stated that the seat of the emotions was the head. What these people really mean is that changes in the emotions are felt most sensitively in these organs.—*Editor*)

ON LETTERS

BECAUSE of the large number of letters we receive, we find it physically impossible to print them all in full. May we request our correspondents, therefore, to make their letters as brief and to the point as they can; as this will aid in their selection for publication? Whenever possible, we will print the letter in full; but in some cases, when lack of space prohibits publishing the complete letter, we will give a resume of it in a single paragraph.

Adventurers Three

Editor, WONDER STORIES:

I cannot speak conservatively when referring to the August issue of "our" magazine. Taken all in all, I believe it is the best issue since the first revolutionary number

The cover with its myriad of colors is intriguing. And no strange is that which it portrays that it might well have been used for a cover contest.

The magazine's new make-up, following the lines of EVERYDAY SCIENCE AND MECHANICS, is super-satisfactory. It makes a futuristic magazine even more modern in tone.

Tooker's "Tyrant of the Red World" is a splendid production. Paul's picturing of the "sky-horses" brings the creatures to life exactly as one would imagine them . . . and exactly as Mr. Tooker described them. The first few pages of description of the fight are most thrilling. Lines like "—invisible body, somewhat larger than Moon, located 8,000,000 miles NW" give a feeling of reality to the tale.

Smith's "Flight into Super-Time" is quite worthy of his typewriter, and am pleased to find words of several less syllables than usual. Paul's imagination equals that of Smith in his picturing of that weird world scene of the *distant* future. The story's good for a sequel, too, or maybe a whole series with the adventurers three.

The Space Coffin", awarded the cover, is indeed the prize story of the issue. This should certainly put down all (or, rather, the few) cries against science fiction detective tales. Hil-

THE READER SPEAKS

liard's is worked out to the nth degree. It positively makes one *tingle*—it's so good. That young man should be mighty proud of his work. "The Space Coffin" is a good, old tale like one of Doctor Keller's Taine yarns. Remember the 'Menace' stories?"

"The Platinum 'Planets'" is next up for award and praise. It's one of those tales like Simak's "Voice of the Void" in a recent QUARTERLY. Every reader appreciates such a story. Beattie assuredly deserves the praise an enthusiastic reader afforded him.

Of course, *everyone* likes "In the Year 8000. It's clever of von Hanstein to mention Mr. White, Bob Cook, and Santa Scientia. They're old friends.

Francis Flagg's "After Armageddon"—a *different* story—offers great promise. Will be glad to see new stories by Juve and Stangland. And as for the translation of Held's tale, I won't rest content till we've had translations from Russia, Italy, and the other countries of the world. So far, Germany and France have been represented. England, too. If the other nations have anything worthwhile to offer, I'll trust you to get it for us.

Forrest J. Ackerman,
San Francisco, Cal.

(We are glad to hear from young Mr. Ackerman again after his long silence. He was once one of our most dependable correspondents, but of late he had been in retirement. His views on the August issue, marking his new emergence into our columns, assures us that the magazine is maintaining its usual high standard.—*Editor*)

The Space Coffin Puzzled

Editor, WONDER STORIES:

This is my first letter to the "Reader Speaks." The August issue was the best that I have seen for many a moon.

"The Tyrant of the Red World" by Richard Tooker was very good. "The Space Coffin" was unusual and kept a steady fast pace. Your new futuristic serial "In the Year 8000" is one of the best stories I have ever read. Paul really outdid himself in the cover of the August issue.

By the way, something about the cover puzzled me. The box containing the gold seemed to be shooting or floating in mid-air without any fastening at all to the transparent case. Is this an accident, or what?

The "Science Questions and Answers" are an invaluable help to the layman. I am of the fair sex as you see, and wonder why people think that the "frail" sex is good only for mushy stories. I wonder.

Marianne Ferguson,
Worcester, Mass.

(There was no need for the gold to be fastened to the space coffin in the August cover. Both objects were falling toward the earth at the same speed, and therefore they would remain together. Only when they entered the atmosphere and the air resistance on them differed would their relative speeds change. For the frail or fair sex, we have much respect. Some of our best stories have been written by women; and we number thousands of women among our readers.—*Editor*)

The Editors Were Lenient

Editor, WONDER STORIES:

In several stories I have found mistakes in science, reasoning and thought and have promised myself time and time again to write you concerning them.

In your August issue, however, I noticed what seemed to me a careless misunderstanding on the part of the writer. Mr. Clark Ashton Smith author of "The Flight into Super-Time" is the first man to describe the flight through time with any degree of accuracy. His story absorbed my interest to the very end, but as usual he made a blunder in science as did you, dear editor, in your footnote.

Mr. Smith failed to remember that during the seven months of time during which the puppets of his imagination lived with the people of Mohaun Lor the planet on which they were residing and the rest of the solar system was hurtling through space leaving far behind them

(*Continued on page* 476)

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All plates are printed in actual natural colors.

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THE READER SPEAKS

(*Continued from page 475*)

the infinitesimal spot in space where the time machine made its arrival on the new planet.

If this reasoning is correct, the tiny replica of the time-machine, containing its message would have to be carried to that aforementioned spot in space in order that it might make its journey back through time with any degree of accuracy.

Erwin Bernstein,
Rochester, N. Y.

(We do not believe that Mr. Smith stated explicitly how he sent the message back to the earth. The feat naturally would be a gigantic one, like hitting a dime at 1,000 miles or more. But the matter of determining the position of the earth in space would not be insuperable; for the earth is moving at a predetermined speed toward a predetermined spot in space. Perhaps the position of the earth at any future time could be determined with considerable accuracy. We personally believed that the sending of the message back to earth was the weakest part of the story. But since the yarn was so good, the editors were inclined to be lenient on that point.—*Editor*)

Might Better Have Chosen 87

Editor, WONDER STORIES:

I've been a reader of WONDER STORIES since its infancy, but this is my maiden attempt to get something into "Reader Speaks."

The reason I'm writing this letter is that I noticed a mistake in the "Tyrant of the Red World" by Richard Tooker. If we look at the Periodic Table of Elements, we see that element 85 is in the same group as fluorine, chlorine, bromine and iodine. According to the theory of gradation of properties (which has worked out in this group, as well as most of the others), element 85 should be a heavy, blackish, non-metallic solid, and not a gas as stated in the story. This gradation of properties is proven by the fact that fluorine is a light gas chlorine, a heavier gas; bromine, a volatile liquid; and iodine, a fairly light solid.

Even though 85 were a gas, it would be less active than oxygen, because iodine, which is less active than oxygen, would be more active than 85, according to the Periodic Chart. Since oxygen seems to have had no effect on the metal in the space flier (it could not have left the earth, were that true), I don't see how element 85 could have caused the rusting of the metal, as it was supposed to have done.

Besides these two objections, the story was wonderful. Tooker might better have chosen 87, which would be so active, that we have no means of knowing what it would do to metals, it is as yet unisolated, and it probably has such a low boiling point, that it might normally be a gas. Since it is situated between radium and radon, both radioactive elements, it might be radioactive, also, but that is not certain.

Another objection of mine is that a number of stories have our hero making a time ship or space ship by means of his own research work, then pushing a button, and off he goes. There are two objections to this type of story.

First of all, great achievements of that kind are not entirely discovered by one man—it is the result of the steps and failures made by many men. Usually the result is merely a correlation of discoveries already made.

Secondly, I am sure that most of the readers of WONDER STORIES have had some sort of scientific education and would understand, not technical explanation, but at least semi-technical ones. After all, one of the avowed principles of WONDER STORIES is to spread scientific knowledge to those who will not or can not get it in any other fashion—that is, without the sugar coating that makes the pill palatable. But don't make the sugar coating the end rather than the means to an end.

"A Flight into Super-Time" by Clark Ashton Smith is of the type that avoids scientific explanations (so that we can't catch them up, if they make any errors) and merely uses the time machine as a medium to show us his ideas of the bizarre life that he imagines may exist on other worlds. Not that I'm knocking his stories (they really are entertaining), but I would like a little science mixed in with the imagination. On one point, I must congratulate Mr. Smith—he is one of the few who have realized that if one travels in time, he would not remain stationary relative to the earth, but would stay in the same spot in space, while the sun (with the earth following) departed, until the machine were shut off. This would remove the killing-of-grandfather paradox.

Well, to return to the topic, I am (and I'm sure many others are, also) tired of reference to green, yellow, red, and blue rays, causing heat, paralysis, attraction, repulsion, disintegration, and whatnot, without any attempt to explain their nature or their relation to our own knowledge of electromagnetic waves.

The stories by the Germans (Burgel, Gail, Von Hanstein, Spohr, etc.) were magnificent. The more of them we get, the better.

Since you changed back to the large size, I believe the following have been your best offerings: (chronological order)

Beyond the Singing Flame by Clark Ashton Smith
The Time Stream by John Taine
The Crystal Empire by Sidney Berlow
Conquest of Two Worlds by Edmond Hamilton
The Final War by Carl W. Spohr
The Eternal World by Clark Ashton Smith
The Brood of Helios by John Bertin
The Hell Planet by Leslie F. Stone
The Invisible City by Clark Ashton Smith
In the Year 8000 by Otfrid Von Hanstein
Tyrant of the Red World by Richard Tooker

The worst stories were:

The Andromeda Menace by Joseph F. Houghton
The Duel on the Asteroid by Miller and McDermott
Red April, 1965 by Frank Kelly
Vanishing Gold by Capt. S. P. Meek
Why the Heavens Fell by E. T. Snooks

The remainder of the stories were more or less mediocre.

As to Paul's drawings, I would say that they seem a little stereotyped, but at least they are clear and easily understood, which is more than can be said of other artists. No one can match Paul in drawing scientific apparatus. In that field he is unique.

Arthur Jaffey,
Chicago, Illinois.

(Mr. Jaffey's contentions merit consideration. However, our author was making use of some of his poetic license in picturing element 85 as he did. We shall probably have to wait for further researches to tell us who was right. Meanwhile we are glad to learn that the story was received so well.—*Editor*)

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THE READER SPEAKS

Before the Dreamer Wakes

Editor, WONDER STORIES:

Mr. Gernsback's editorial, "The Wonders Of Dreams", struck me as being both unusual and thought-provoking. He brought forth a number of theories that had never occurred to me.

I have never been able to accept the "subconscious self" theory of dreaming, however. Sleep, as I understand it, is merely a bloodless condition of the brain cortex. Dreams, therefore, if I am correct, are preceded by the return, or partial return of blood to the brain, caused by the action of some external force—a noise, a slight depression in the bed, etc., etc. It is my belief, also, that ninety per cent of all dreams occur only a short while before the dreamer awakens; while blood is gradually flowing back into the brain cortex. Other dreams experienced throughout the period of sleeping are not remembered.

A few comments on your September issue. "After Armageddon" was your best story. Why? It was a delightful lapse in your policy of interplanetary stories *ad infinitum*. It was a human, well developed narrative, not the already stereotyped, impending-doom-of-death-in-abysmal space plot with which you have been feeding our seemingly bottomless maws. Why, oh why, can't science fiction stories occur on the good old earth once in a while? Why can't men invent time machines a little more often; why can't twisted scientists go mad with power again, why can't giant insects, strange, unearthly creatures, and illustrations of weird experiments in more weird laboratories grace your covers again?

What I would welcome now is a picture of a great, ten and a half "bug" attacking an expedition that has flown back into primeval time. Just stick that "bug", and the expedition, and the time machine, and the monstrous ferns (and a few Dinosaurs, and a Brontosaurus or so, to boot, if you wish), right on the cover of your next issue. That, we would say, "is like the good old days"—the good old days when Paul's brush was sweeping untamed across his cloth; when the bottom of the ocean, or a spot in South America's unexplored jungles, was as good a situation for fantastic adventures as mid-space with an air leak in the hull of a Pluto-bound space liner. Men don't have to have "lean, serious faces", either, to capture my admiration. A fat little scientist with bushy hair, wallowing through the vapor and muck of some monstrosity-crowded land in another dimension, catches my fancy just as well.

The "black-mouthed youth" controversy seems definitely settled, but I can't resist thrusting my laggard dart into Mr. Schwartz's heart. At one time and another in the past five years, I have carried on correspondence, visited and become acquainted with over one hundred rabid science fiction fans throughout the United States. With no exceptions whatsoever, (now this is straight from the shoulder), I have found them far more intelligent, better informed than the average. They write excellent letters, all of them; many have been valedictorians, leaders in their respective classes, they edit school papers, are authors of promising repute, and, above all, are fine, clean, upright fellows! What more could one say?

I'm bringing this letter to a close with a plea. For heaven's sake, can't we have fewer interplanetary stories? There's the QUARTERLY specializing in such, here's the monthly featuring them throughout ninety percent of its pages. These stories deserve their space, true, but why let them hog the entire beat? A diet of one thing, literary or otherwise, soon becomes monotonous and tasteless.

Herman Teeter,
Russellville, Ark.

(Perhaps one of our authors will seize upon this plot generously offered and do something with it. With regard to the brain cortex, it is our impression that a bloodless condition accompanies a faint instead of sleep. Perhaps it seems that dreams occur just before awakening because the dream is sufficient to cause awakening. It is difficult to tell which is cause, and which effect.—*Editor*)

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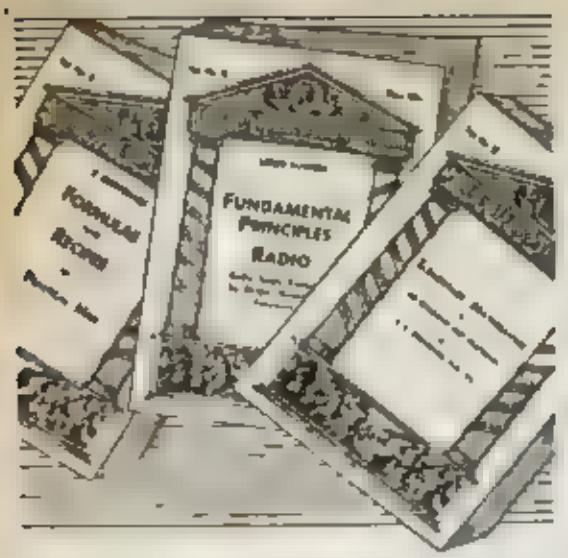

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PRIZE WINNING LETTERS

(Continued from page 469)

As the metal is condensed by the water into very minute droplets, it is probable that the particles would at least approximate the spherical shape of the pictured particles.

The final question is that of the colors of the particles. A descriptive table of the elements states that gold is yellow in the mass, but when finely divided, may appear black, ruby, or purple. Similarly, silver appears yellow when finely divided.

It is probable, then, that the cover illustrates a highly magnified colloidal suspension of one or more of the noble metals in water; gold, or gold and silver.

A Thin Film of Oil
2nd ($7.50) Prize Winning Letter

Submitted by Edwin P. Marts, Jr.
726 N. Elmwood Avenue
Oak Park, Illinois

Matter is directly constituted of infinitesimal particles called molecules. The molecules of gases and liquids are continually rushing about at speeds varying according to the density of the medium; the molecules in liquids being closer together than those in gases and thus being unable to travel far without colliding with neighboring particles. The cover design represents the molecular construction of some material, obviously of high density due to the proximity of the molecules (represented by the colored spheres). The material cannot be a solid since the molecules are not arranged in straight rows running through from side to side, as is the case with solids, particularly crystals. Since it is neither a gas nor a solid, it is apparently a liquid.

The different colors of the spheres are representative of the different types of molecules constituting the liquid; each color designating a molecule of a different element or of a different chemical compound. Since there are some seven colors shown, and correspondingly, seven chemical constituents of the liquid, we see that it is quite complex. Considering that the layer is only three or four molecules thick, the material is probably a thin film of complicated oil or perhaps an extremely thin sheet of complex glass. (Glass being a liquid, flowing slowly under pressure, i.e. an "amorphous solid.")

A Crystalline Structure
3rd ($5.00) Prize Winning Letter

Submitted by Garford Gordon
211½ S. Allen Ave.
Pasadena, Calif.

In my opinion the picture on the cover of your July number represents a portion of the atomic structure of a crystal, with the colored spheres representing the various types of atoms in the crystal. That a crystal is represented is evident from the fact that the atoms are grouped in a pattern and not symmetrically about one "central atom." This is in accordance with the latest work in crystalline structures, which indicates that in the crystal state, no one "central atom" holds any other atom entirely. For instance in NaCl (common salt), one Na (sodium) atom does not hold one Cl (chlorine) atom but instead exerts one-fourth of its attraction on each of four Cl atoms—the other three-fourths coming from other Na atoms.

It would appear that the crystal depicted is that of a complex inorganic compound—perhaps a hydrated double salt. An organic compound would have less variety in the types of atoms—probably only atoms of oxygen, hydrogen, and carbon would be present.

The proportions are not correct in the picture—the spacing between the atoms is very much too small as compared to the size of the atoms. However, to get correct proportions it would be necessary to make an impossibly large picture or to make the atoms too small to be recognized. This error of proportions is made even in scientific models of crystals; so I think that, on the whole, the cover picture is a credible representation of the atomic structure of a crystal of a complex substance.

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Fourth to Tenth Prize Winning Letters

(Each contestant is awarded a year's subscription to either WONDER STORIES or EVERYDAY SCIENCE AND MECHANICS magazine, at their choice)

Fourth Prize Winning Letter submitted by Millard H. Clary, Genesco, Kansas who interprets the cover as the molecules of a strangely mixed chemical solution highly magnified.

Fifth Prize Winning Letter submitted by Wilmer Howell, Carthage, Miss., who explains the cover as a stream of electrons as created by the cathode ray tube.

Sixth Prize Winning Letter submitted by Burton K. Hetzel, 724 East 27th St., Brooklyn, New York, whose explanation is a great number of light corpuscles—the colors formed by breaking up white light by a prism.

Seventh Prize Winning Letter submitted by Clay Ferguson, Jr., 810 Park St., S.W., Roanoke, Va., whose interpretation is photons or particles of light, the colored balls being the elements of white light, the black balls being light beyond the visible spectrum.

Eighth Prize Winning Letter submitted by Edgard Camille, Erie, Pa., who has each ball representing an atom as it would appear under a powerful microscope.

[illegible] Prize Winning Letter submitted by Arthur Knaedinger, 116 Clinton St., Brooklyn, N. Y. Mr. Knaedinger sees the balls as protons and electrons rotating about each other.

[illegible] Prize Winning Letter submitted by James [illegible], 4808 Vandyke St., Phila, Pa., who has reduced to such a size that molecules [illegible] as shown on the cover with running [illegible] them.

SCIE[illegible]TIONS AND [illegible]CS
(Continued [illegible])

scope from the observation of changes in pitch of sounds to the calculation of events of cosmic importance.

2. Roche's limit is a formula to predict the tidal effects of a heavenly body upon its satellite, as the satellite approaches the primary. Although the formula was applied principally to solids and liquids it may also be used on gaseous bodies. Roche stated that if a heavenly body and its satellite were of equal density, and the satellite were small in comparison with the primary, that the satellite would be broken to pieces by tidal action when its orbit was reduced to 2.45 times the radius of the larger body. Roche envisioned a satellite circling its primary and approaching closer and closer. At each approach the tidal action on the smaller body due to the pull of the larger becomes greater and greater, until when they have reached Roche's limit the smaller body will be broken into fragments. Thus, our moon is said to be approaching the earth, whose radius is about 4,000 miles. If the moon's orbit ever is reduced to 2.45x4000 or about 10,000 miles from the center of the earth (about 6000 miles from the earth's surface) the moon would be broken to fragments.

The rings of Saturn are supposed to have resulted from the disintegration of a Saturnian moon that came within Roche's limit. The following figures show other bodies that are dangerously close to Roche's limit.

Radius of Saturn's outermost ring—2.30 Radii of Saturn.

[illegible]mit—2.45 radii of primary.

[illegible]rbit of Saturn's innermost satellite of Saturn.

[illegible] of Jupiter's innermost satellite of Jupiter.

[illegible]it of Phobos, innermost satellite—2.79 radii of Mars.—Editor.

BOOK REVIEWS

[illegible]LLERS IN THE MIRAGE by A. Merritt, 295 pages, stiff cloth covers. Size 5¼ x 7½. Published by Liveright, Inc., New York. Price $2.00.

Merritt continues his triumphs of fantastic fiction in this book, which should be familiar to science fiction fans. Alaska, the white, brooding land of mystery forms the background of this adventure. As in his other stories, Merritt blends together science, fantasy, superstition, and folk lore into a mixture of exciting adventure.

We see a blond giant traveling into Alaska to probe a mystery of a strange forgotten people—a race of pigmies. They take him as their God and appeal to him for aid against their enemies, a race of normal-sized people. Leif, the Norseman, is expected to deliver them from their enemies. There is his love for a witch-woman, the woman of evil, and the struggle between her and the woman of goodness. The struggle between the two races, and the two forces represented by the woman becomes absorbing to the last page.

THE CONQUEST OF THOUGHT AND INVENTION by H. Stafford Hatfield, 80 pages, stiff cloth covers. Size 4½ x 6½. Published by W. W. Norton Co., New York. Price $1.00.

Dr. Hatfield takes the view in this little volume that the machine age is breeding out of the race both adventure and original thought. Both of these qualities, he contends, are virtues in a civilization that is growing; but in the future they will constitute dangers that the social organism cannot permit. All harmful tendencies in individuals will be "canalized off" by distractions provided by society—by high flown research which will not affect ordinary life, by amusements and pleasures. The population of the future, mechanized society, in the view of the author, will be meek, submissive, unassertive, herd-like in its reactions and extremely conservative as regards any action that might endanger its material comforts. Even original thought in technology, that gave us our material civilization, will not be encouraged. For, says the author, "an engineer who has built a house of his own design upon his own land, raised a family, and taken all of his own and wife's poor relations to live with him, is not likely to be in the same mind about daring and dangerous projects as in the days of his apprenticeship when he was in lodgings as a single man, nor are the poor relations likely to exhibit the same activity as in the days when tomorrow's breakfast depended upon the ingenious expedients of today."

PROBLEMS OF RELATIVE GROWTH by Julian Huxley. 276 pages, illustrated; stiff cloth covers. Size 5⅞ x 9. Published by Lincoln MacVeagh, the Dial Press, New York. Price $3.50.

This volume, by one of the best known biologists of the day (grandson, as is usually stated, of Thomas Huxley) is admittedly for the professional biologists, rather than for the lay reader. But its general aim is one that should fascinate everyone interested in life forms. Professor Huxley has studied the growth of various parts of the body of a number of animals, with relation to the growth of other parts and to the body as a whole, and has attempted to find laws that might govern this relative growth. The problem is of far-reaching importance as regards man himself, as no doubt Professor Huxley hopes that by further studies in this field, clues might be obtained as to the process by which body evolution occurs.

A HISTORY OF EXPERIMENTAL PHYSICS by Carl Trueblood Chase. 200 pages, stiff cloth covers, illustrated. Size 5¾ x 8¾. Published by D. Van Nostrand Co., New York. Price $2.75.

The fascinating and epochal advances in our scientific knowledge are recounted here, from the days of Thales of Miletus to Einstein, Compton and Heisenberg. The history of experimental physics is in reality the history of physics itself, for it is upon the basis of experimentation that our present knowledge of the physical world has been constructed. The author divides his chapters into units that broadly demark the growth of our knowledge: Galileo the Pioneer, The Wave Theory of Light, The Mechanical Theory of Heat, Atoms and Molecules, Michael Faraday, Hertz and Maxwell, Cathode Rays and X Rays, are some of the chapter headings. The book is pleasantly and popularly written and should not be beyond the scope of the average educated person.

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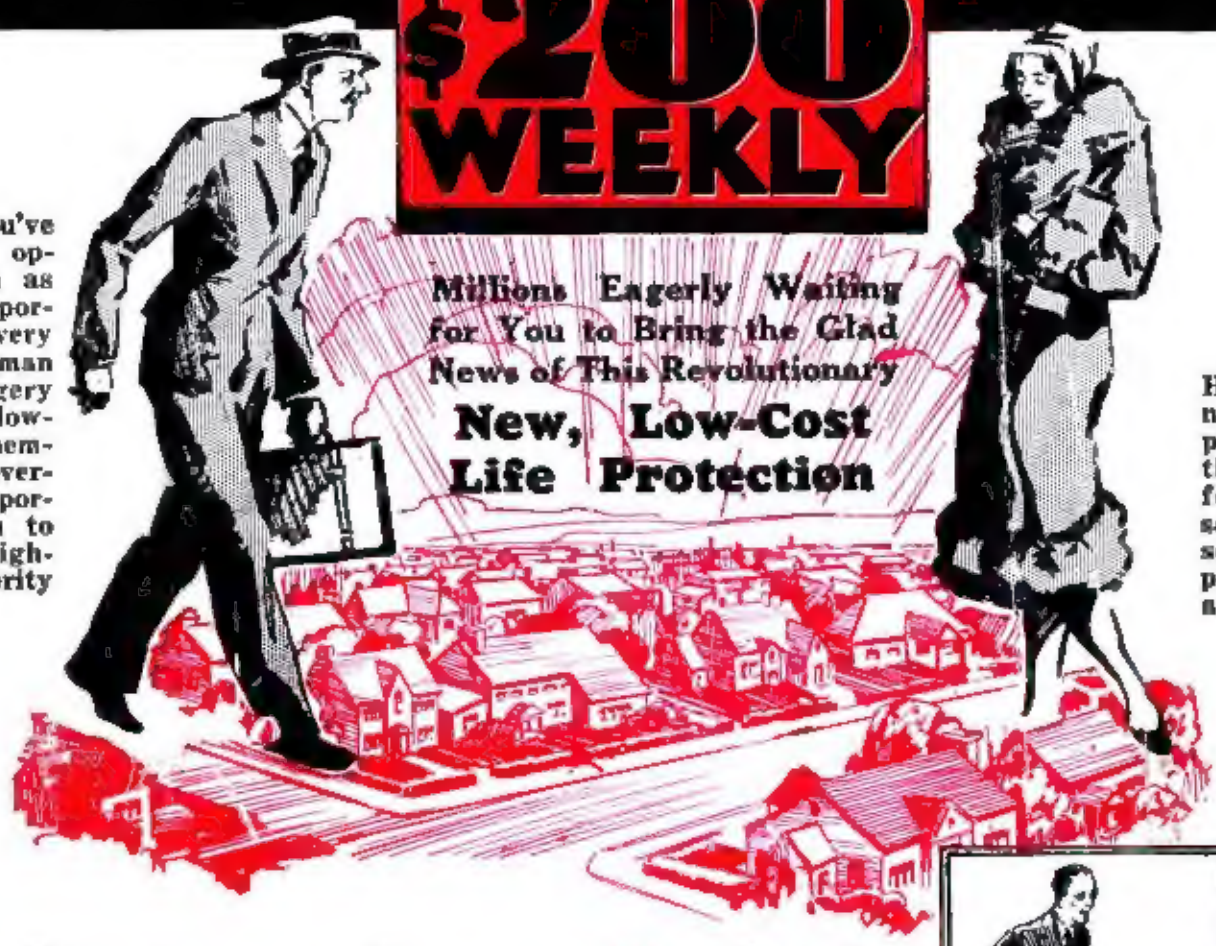

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